



NEW ZEALAND JOURNAL OF AGRICULTURE

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No. 5

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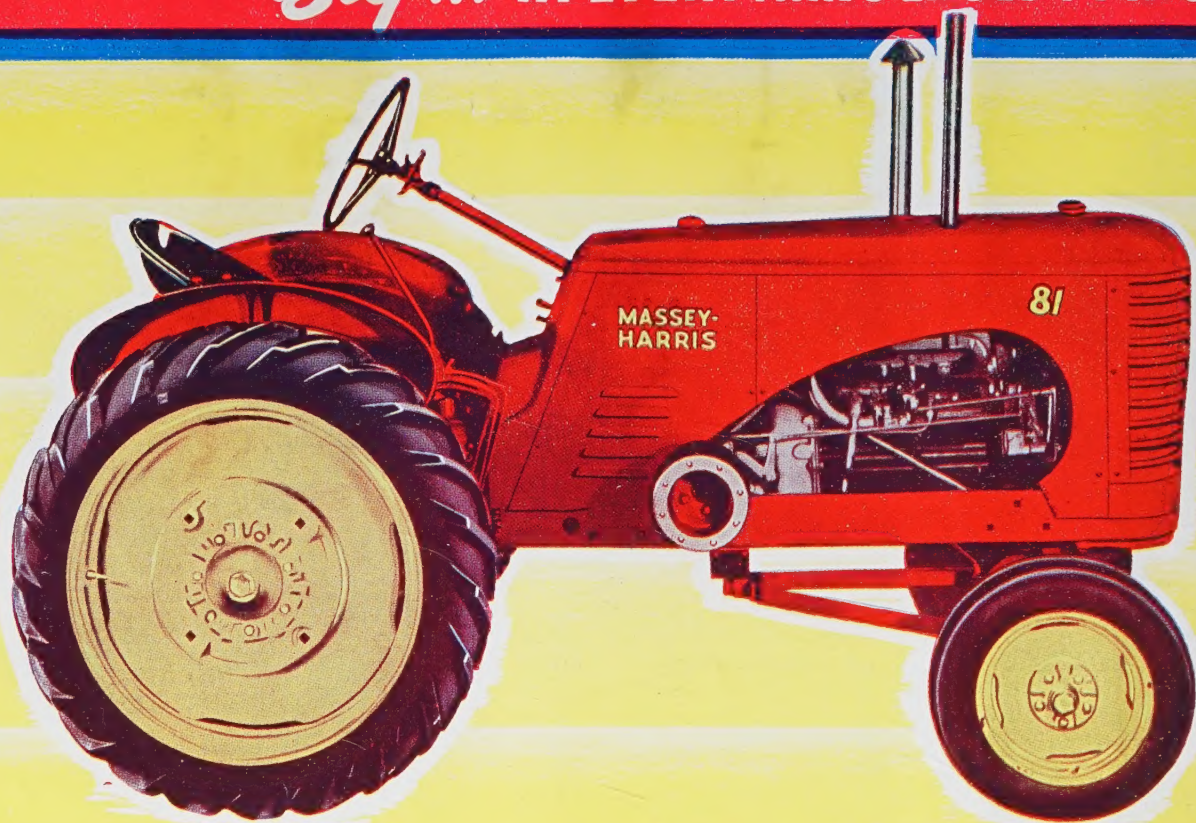


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LIQUID MANURE

The Fertiliser Value of Cowshed Washings

The fact that as yet a very small proportion of our dairy farmers, even in these days of drastically-reduced supplies of artificial fertilisers, have equipped their farms with the means of collecting and distributing the shed washings, makes it clear that some more definite information is required by them as to the real value of this material which is regularly washed away into streams and drains from the great majority of our dairy farms.

THE experience of the pioneers in the use of the washings from the cowshed and holding yards on dairy farms in New Zealand has resulted in a relatively slow extension of the practice in those districts where the results obtained by the topdressing of pastures and fertilising of crops with this liquid manure have given outstanding results easily seen and understood by neighbouring farmers.

Every good gardener knows the value of liquid manure (animal droppings and water) and would give almost anything to have a regular supply. He envies the farmer who can let tons of excellent manure go to waste each year.

Records and Observations

Knowing something of the actual manurial value of such material in terms of nitrogen, potash, lime and phosphate, and the need to get some accurate details of the quantities of these the average dairy farmer is wasting each year, the author arranged with two dairy farmers in Central Taranaki to keep the necessary records

By
G. A. BLAKE,
Instructor in Agriculture,
Hastings.

of the amount of liquid manure they obtained during the year from their respective herds. The shed washings were collected in each case in a sump to hold between 5000 and 6000 gallons. Samples of the liquid manure as it came from the sump for distribution on the pastures were taken each month and a complete analysis was made of each sample by the Department's chemist. The measurement of the quantity of liquid manure together with the analysis of the samples has given some very interesting and instructive indication of what liquid manure so collected does actually contain in the way of fertiliser.

The observations and records were made on the farms of Messrs. R. Haseltine and L. Craig, of Pukengahu, who are both firm believers in the value of this manure on pastures. To



Several years collection of manure from which the elements are quickly leaching the fertilising ingredients.

these farmers the thanks of the author for their assistance and co-operation are recorded.

Mr. Haseltine's farm is typical of many of the smaller high-producing properties of Central Taranaki having been heavily limed and well topdressed with phosphates over a number of years, while Mr. Craig's farming is on a bigger scale and much less lime and phosphate has been used in the past.

These differences in liming and topdressing are very clearly shown in the results of the analysis of the liquid manure from each farm. Undoubtedly the quality of the pastures does affect the quality of the animal manure obtained from the stock.

Results of Analysis

In the following table, the quantities of liquid manure collected on each farm are recorded for the months of August to May in the case of Mr. Haseltine's farm and for September to May for Mr. Craig's farm. The manurial content of the material collected each month is set out in terms of well-known fertilisers.

Quantities of liquid manure collected per month on Farm 1 and Farm 2. Analysis of monthly collections. Nitrogen, as sulphate of ammonia or dried blood. Phosphate, as superphosphate. Potash, as 30 per cent. potash salts. Lime, as carbonate of lime. Magnesium, as magnesium sulphate.

No. 1 FARM.

Month	No. of Cows.	Gals of Manure.	Sulphate of Ammonia. lb.	Dried Blood. lb.	Super. lb.	30% Potash. lb.	Lime. lb.	Magnesium Sulphate. lb.	Total. lb.
August	54	3,000	106	340	57	84	62	59	602
September	55	5,000	176	566	95	140	102	97	1,000
October	55	4,000	141	453	76	112	82	78	801
November	55	5,000	170	600	106	168	101	111	1,086
December	55	5,000	75	311	53	91	60	68	583
January	50	5,000	151	354	54	100	61	85	654
February	50	4,200	42	379	74	107	88	102	750
March	50	5,500	48	312	67	76	36	81	572
April	50	4,500	108	520	118	124	106	96	964
May	30	4,800	36	137	28	54	30	41	290
Totals		46,000	1,053	3,972	728	1,056	728	818	7,302

No. 2 FARM.

September	65	3,400	137	366	42	134	30	48	620
October	71	6,000	241	646	74	237	52	84	1,093
November	72	6,000	224	635	91	275	59	89	1,149
December	71	6,500	196	434	31	219	28	57	769
January	71	5,300	175	390	35	182	44	78	729
February	71	4,000	74	326	23	166	30	50	595
March	68	6,400	99	278	32	93	18	54	475
April	65	6,000	224	606	87	197	69	90	1,049
May	45	5,000	141	305	25	130	21	46	527
Totals		48,600	1,511	3,986	440	1,633	351	596	7,006

On farm No. 1 (Mr. Haseltine's) the total of 46,000 gallons of liquid manure was collected from a herd of 55 cows over the ten months for which records were kept. The sump holding a little over 5000 gallons was big enough to hold the shed washings for one month and with the distributor employed, the spreading of the manure from the sump took only a few hours once a month. At an average application of 4000 gallons per acre, some 11 acres of the farm received a dressing containing on the average, the equal of nearly 1 cwt. of sulphate of ammonia, over $\frac{1}{2}$ cwt. superphosphate, a little less than 1 cwt. of 30 per cent. potash, more than $\frac{1}{2}$ cwt. lime and $\frac{3}{4}$ cwt. sulphate of magnesia.

On farm No. 2 (Mr. Craig's) a total of 48,000 gallons was collected from a herd of 71 cows. Here because of the greater average distance from the pasture to the milking shed much more

of the droppings were deposited on the way to the shed. On this farm about 12 acres were topdressed at the rate of 4000 gallons per acre, resulting in an average distribution of over 1 cwt. of sulphate of ammonia, about 36 lb. of super, $1\frac{1}{4}$ cwt. 30 per cent. potash, 30 lb. of lime and 50 lb. of sulphate of magnesia per acre.

In both cases though the phosphate and lime content of this mixed fertiliser dressing is somewhat low when compared with such applications as 3-4 cwt. of super and 5-6 cwt. of lime per acre each year, the fact remains that a dressing of 4000 gallons per acre of liquid manure collected as shed washings gives outstanding immediate results and on the two farms under observation the results of one application have been quite evident after two years.

It is considered from observations on these and other farms that a decided

improvement in the growth and density of the sward as well as in the preponderance of rye and clovers, can be expected up to three seasons and that an application of such liquid manure once in three years would result in satisfactory maintenance of the improvement. The limited quantities of phosphate and lime in liquid manure are apparently readily available and are kept available in the soil. By covering 10-12 acres a year for three seasons before having to repeat the application, up to 30 acres can be satisfactorily maintained on either of these farms.

Value in £ s. d.

Coming back to money values for the liquid manure as an offset to the cost of the sump and distributor, and the time taken to spread the manure,



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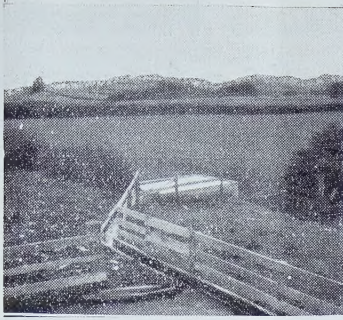
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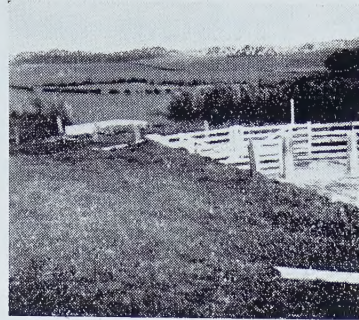


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A general view of Farm 1 showing the sump in the foreground.



A general view of Farm 2 showing the sump in the foreground.

the following calculations based on present costs in terms of artificial fertilisers contained in the liquid manure from a herd of 50 cows, demonstrate that those farmers who are collecting the shed washings and distributing them on their pastures are not actually wasting time and money.

Based on the average for the 126 cows, on the two farms under observation each 50 cows would produce per annum the equivalent of $\frac{1}{2}$ ton of sulphate of ammonia costing £12 10s, $\frac{1}{2}$ ton of 30 per cent. potash at £5, 4 cwt. of superphosphate at 16s. and 4 cwt. of lime at 4s., a total of £18 10s. worth of fertiliser.

The cost of the sump and distributor on the farms referred to was about £30 in each case and the labour in distribution about four hours per month. In two seasons the cost of equipment and of labour for distribution would be adequately met leaving future costs for many years, those of labour in distribution only.

Eighteen to twenty pounds for every 50 cows milked may not appear very much to be wasting every year, but for the 1,800,000 dairy cows of this country the loss of the manurial value of the stock droppings in and around the cowsheds adds up to the tidy sum of £60,000 to £70,000 annually.

As stated in previous articles in this Journal on the subject of liquid manure from shed washings, their application to pastures has a remarkable effect on the ryegrass and cocksfoot and particularly on the clovers, which latter is somewhat surprising in view of the high nitrogen proportion. Further, stock appear to relish pastures treated with liquid manure and have no objection to grazing almost immediately after application.

Another very important and striking point where the washings from the shed and yard are properly collected and regularly distributed, is the remarkable improvement in the general conditions of sanitation in and around the milking shed.

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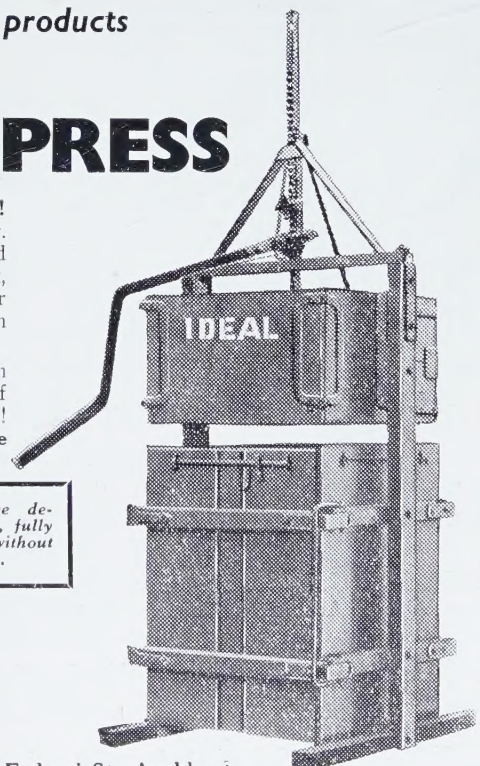
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(2) Mr. J. F. SANDALL, Fairlie, writes:

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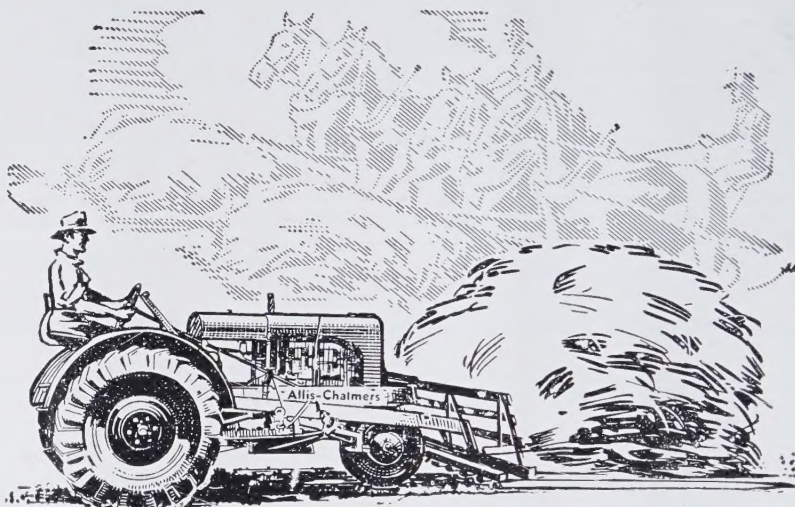
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Haymaking causes more worry, anxiety and disappointment than practically all other farm operations. The time for harvesting is comparatively short, and haymaking cannot be postponed without a consequent loss of quality and quantity. On a dairy farm routine work takes up so much

Essentials in Good Haymaking

THERE is probably no other farm operation today in which system and efficiency count for more than in haymaking; yet, throughout the dairying districts, even where up-to-date machinery is used by some farmers, more or less haphazard methods of making hay are common.

During the haymaking season, a large amount of labour is wasted annually. On some farms this amounts to little, but on many others the loss is serious. Wasted labour does not necessarily mean idleness, but wrong methods, inefficient management, and improper and inefficient machinery. If

By

E. H. ARNOLD,
Instructor in Agriculture,
Dargaville.

a current practice allows labour to be expended unnecessarily on operations which do not utilise the labour to best advantage, then that method should be abandoned and replaced by a new one. Improved methods, together with proper and efficient, i.e., well repaired, equipment mean more work accomplished at reduced costs. More mechanical and horse labour used ensures

more rapid and easier work and often a big saving in the hay secured during unfavourable weather.

It is quite unnecessary for the small farmer to make a heavy investment in new haymaking equipment; but the pooling of suitable and available machinery in co-operation with neighbouring farmers, an increased use of horse labour, and better working methods will mean more work accomplished at a reduced cost, than if each individual farmer attempted to save his own few acres of hay. It is not only the making available of suitable equipment that is necessary, but the reduction of hand labour to a minimum and the restriction of hand labour to those essential operations that cannot be performed by machines or horses.

Care of Machinery

If it is possible to bring about an aggregation of equipment by means of co-operation among neighbouring farmers, it is also essential, that prior to the commencement of the haymaking season, all machinery be carefully overhauled. At the same time, there can be laid down a stock of those spare parts so necessary when minor breakdowns occur.

Mowers should be kept in good repair, especially if operated by those

of the day that little time remains for this work. Labour is not only scarce, but expensive. And there is the weather to be considered, a factor which has a very important bearing on quality and over which the farmer has no control.

who know very little about machinery. The most important thing is to see that the knife bar is lined up correctly in order to prevent breaking knife-bars. The proper adjustments should be made carefully, so that a clean job results in the field. The edges of the knife sections and the ledger plates should be in actual contact, just as must be the edges of a pair of scissors. To keep down the draught of the mower, to eliminate side-draught, to avoid ragged cutting, and to prevent grass hanging on the knife, the sections of the knife must centre on the fingers. This means that when the knife is at the end of its outward stroke, each section should lie in the centre of a finger, and similarly when at the end of the inward stroke; further, the blade should move so that each section travels to and fro between the centre lines of a pair of fingers.

It is a good practice to commence mowing in the morning with at least two sharp knives, a good knife seldom remains sharp after two hours' work. The extra knives can be used when the other becomes blunt, or may replace broken ones. The best sharpener is the grindstone, using plenty of water to keep the sections cool during grinding. The emery wheel or the file may have to be used; but dry sharpening is liable to destroy the temper of the



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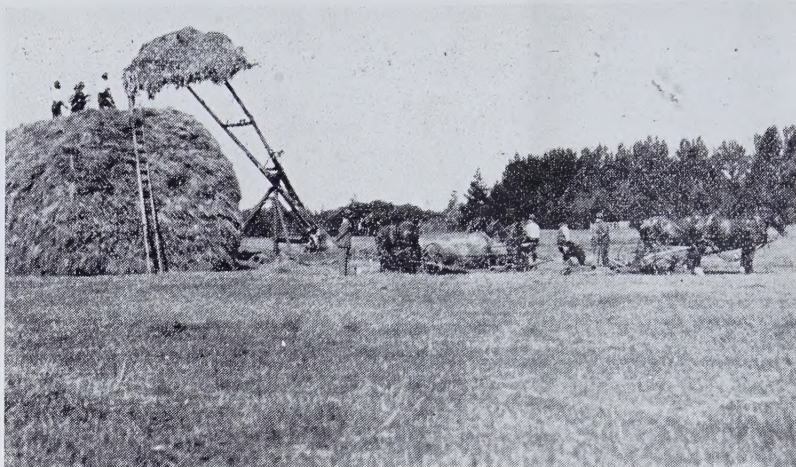
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knife metal. Mowers should be oiled frequently, as oil makes the machine run easier and last longer.

Mowing Practice

Considerable differences of opinion exist as to when is the best time of the day to cut hay. Some never cut when the grass is wet, others start mowing at any time, while some mow in the afternoon only. When large areas must be harvested, it is necessary to keep the mower going most of the day. Where the acreage is small it is customary to wait until the dew is off the grass. While this practice is desirable in some cases, in others, it is merely wasting valuable time and it should be followed only with careful judgment. The farmer should consider in the light of his own experience and that of his neighbours as to the earliest possible time in the morning after a heavy dew at which it is safe to start cutting under different conditions, considering the amount of moisture contained in the upper surface of the soil, whether a yield is light or heavy, the climatic conditions, and whether or not a tedder is to be used. All possible loss of valuable time, such as is entailed by having labour idle or employed at work which is less profitable and necessary than making hay, should be avoided.



Further, it is important to know how much hay to have down at one time. It is not good practice to have two or three times as much hay cut down as can be handled within a reasonable period. Loss of quality can be avoided by mowing only one day ahead of the stacking or baling; then if rain comes up, a minimum amount of hay will be damaged.

When two mowers are at work in one field, it is best for each teamster to lay off a "land" for himself and work independently. With two machines working one behind the other, if the slower team is in front, the second mower can travel only at the slow pace of the first mower. If the front mower has a breakdown, the following one is often stopped and remains idle while repairs are being made.

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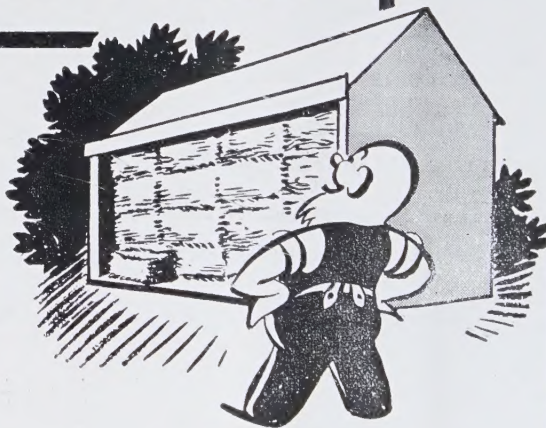
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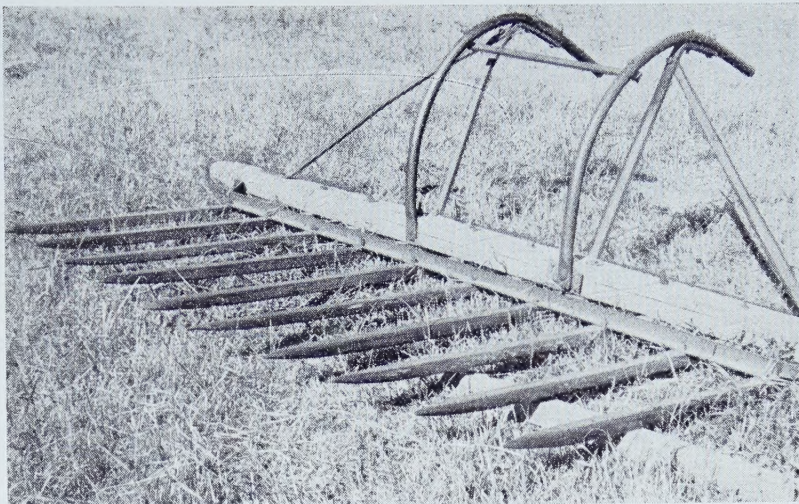
Curing

Practical haymaking in this country must be governed by the motto, reduce with all possible haste, the exposed area of the hay surface. This results in wind-drying the hay. If hay is exposed to the sun, the grass is bleached; the clover leaves dry out and become brittle; these, the most valuable part of the hay then fall off and are lost in the subsequent handling. Most hay is left in the swath, and from there when apparently dry, swept in, and immediately stacked. The quality is thus not as good as it could be and serious consideration should be given to raking the hay up into windrows and later into haycocks. In fine weather good hay can be made without cocking, but care should be taken that hay left out in the windrows is not left too long and allowed to become sun-bleached. By thoughtful organisation, much of the handling of hay between cutting and stacking or baling can be done by horse labour, but when the hay, on account of the weather, must be cocked, then the full use of sufficient hand labour is well repaid. Although the hay rake will bunch up the hay from the windrow, only hand work can build haycocks which will turn the rain.

Stacking

The use of some form of sweep to bring hay to the stack is now almost universal. But on some farms, the hay after being gathered by sweeps, the most up-to-date way of hauling hay, is then pitched on to the stack by man labour. Perhaps two men pitch half each until the stack reaches a height of ten feet. Then it is necessary to use an empty wagon as a platform. From then on, it is necessary for one man to pitch the hay on to the wagon, from where the second man pitches it on to the stack. This operation reduces the amount stacked per hour by just one-half and is very inefficient. Even the simplest form of home-made stacker by which the hay is hoisted by horse labour is more efficient. In fact, in most districts under a system of co-operation sufficient stackers are available, and their use makes haymaking easier work, more rapid, reduces costs and ensures the best quality hay being secured. Stackers will enable a large haystack to be built, instead of a number of smaller, poorly built stacks which usually result when the hay is man-handled.

In haymaking operations, much time can be saved, labour utilised to full advantage and costs reduced, if thought is given to the number of men employed and the number of sweeps used when stacking hay. The smallest gang that can be used to put hay into the stack, when using the sweep and the stacker, consists of two men. When only two men are employed, one man uses the sweep and the other works on the stack. This arrangement causes



A tumbler sweep.

[E. B. Glanville, photo.]

unnecessary running about at the stack and idleness of the sweep. When three men are employed, the third man, perhaps a youth, drives the team on the stacker hoist. With this method, the men at the stack are idle a large part of the time.

Three men will handle more hay if two sweeps are used and the sweep-drivers work the team on the hoist. A properly-arranged and efficient gang requires four men, or three men and a boy. Two sweeps are worked by

two of the men, one man works on the stack and the other man or boy drives the team hoisting the hay. Some stackers are automatic, while others require the services of an operator which necessitates an extra man and increases the cost of stacking. In extremely hot weather, or when the yield is very heavy, it is more efficient to use a further man on the stack.

A factor affecting efficiency and costs, but which is often neglected, is the site of the stack in the field. This



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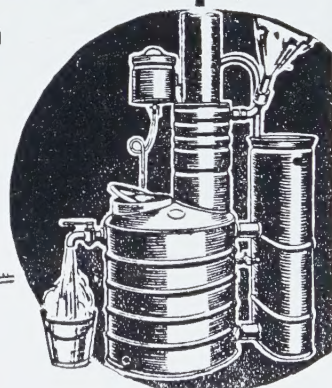


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WITHOUT venturing into the realms of prophecy, and without giving away any military secrets, we think we can safely say that this spring will see something in the nature of a general awakening right along the democratic front.

The Allies are marching, and if we of the Home Front cannot march along with them we can at least see that they get the fullest support that it lies in our power to give.

Don't let there be any misunderstanding about this, there can be no evading the responsibility. It's up to every man, every woman, every business.

The A.M.P. Society's business is the conservation of the savings of its members for the easement of their old age, and for the care of their families. Today a large proportion of those conserved savings is being loaned to the Nation to lighten its financial burden. £500,000 was its contribution to the recent Liberty Loan, the A.M.P. Society being the largest contributor, and already it has subscribed £250,000 in advance to the next one. Month by month it is regularly putting all it can spare of its members' Life Assurance Savings into New Zealand Government and Australian Commonwealth Loans.

There can be no let-up until Victory is assured.

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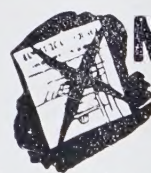
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W. T. IKIN, Manager for New Zealand.

may have to be decided by the feeding out operations in the winter. When these are of little or no consideration, if a suitable site otherwise is present, the stack should be placed as near as possible in the centre of the field. This avoids, firstly, short hauls, idleness of the sweeps, overwork for the men on the stacking, and later, overwork for the sweeps and idleness at the stack.

Baling Hay

Baling of part or the whole of the hay crop on some farms has on account of its many decided advantages come to stay in many districts. As most of the pressing is done by contractors, it is extremely important that the labour in the field be carefully arranged, so that the press is furnished with sufficient hay to keep running to its greatest capacity. As delays in the arrival of the outfit on the farm may be unavoidable, hay for pressing must be put up to finally cure in well-built haycocks which will turn the rain. Further, an early start can be made in the morning without waiting until dew is gone off the hay in the swath or wind-row. Carelessness in setting up the press, usually by placing it at one end of a field instead of in the centre, results in wasted labour and low capacity of the outfit. The sweep drivers often cause extra work by dumping the hay so far away from the press that one man must pitch all of it to a second man, who pitches it to the feeding table. If several sweeps are in use, the dumping of only one sweepful at a time close to the press, enables the feeders to pitch easily just the right amount to make a charge, and thus keep the press working steadily to capacity.



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There is no charge whatever for a report on your property. BORACURE inspectors are thorough, trained, technical men, competent to advise on Borer control and timber preservation. Every property should be thoroughly examined periodically to ensure freedom from Borer, White Ant and Rot. You can use the efficient BORACURE service without obligation—special care is taken to inspect out-of-way places such as sub-floor areas. Before buying a property, before undertaking renovations, get advice on Borer infection in home, furniture or farm buildings. Get advice early. Call or write for Booklet, from—

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**The Livestock Division
Issues a Warning**

Concerning Prevalent Disease in Pigs As It Occurs During The Summer Months

ALTHOUGH the summer months are usually ideal for most classes of stock, particularly calves, lambs, dairy and fattening stock, it is rather remarkable that a considerable amount of disease is seen in pigs during this period. There must be a reason for this, and if one considers the conditions under which pigs are reared and fattened, with the conditions pertaining to other classes of stock, the explanation may probably be due to the following cause.

Whereas the former class are free at pasture and have access to a variety of food, the latter class are mainly confined to small sections and styes, the food supply being limited mainly to skim milk and whey and a limited amount of other food. During the warm summer months it is difficult to maintain the bulky milk by-products in the most wholesome condition for feeding to pigs owing to fermentation and bacterial changes. It is also more difficult to keep storage tanks, barrels, or other milk containers, feeding vessels and troughs in a clean condition owing to the prevalence of flies and the warmer temperatures.

Greater care is therefore necessary to see that conditions in regard to the food supply and the general hygiene of the styes and sections is maintained at the best possible level during these months.

General Considerations

The endeavour to maintain health in pigs by suggestions regarding feeding and management under the varying conditions met with from farm to farm is a most important aspect of disease control. The surest way to control disease in pigs is to pay attention to the following: overcrowding, over-feeding, regularity in feeding, avoiding constipation or scouring, variety in the diet (roughage or green feed if need be), sanitation and drainage, hygiene, oiling to prevent lice and mange, prevention of checks in young growing pigs, prevention of extremes of temperature during the summer (hot days followed by cold nights), shade and draught-proof housing, the general maintenance of growth and bloom in pigs. This aspect of the

fight against disease in pigs cannot be too strongly stressed under our farm conditions, as there is a tendency to mass production or intensive methods of pig raising with a very limited variety in the nature of the general food supply for all classes of pigs, irrespective of the varying requirements of the pigs at different stages of growth and development.

Another aspect of the fight against disease in pigs is careful observation and the immediate treatment of pigs that are off-colour.

Isolation of the sick pig in the early stages in order to prevent other in-contact healthy pigs in the same sty contracting the infection is the first thing to be done. Isolation is not an empty term; it requires to be applied and applied promptly, and with judgment in many cases. The separation of the healthy from the sick, the isolation

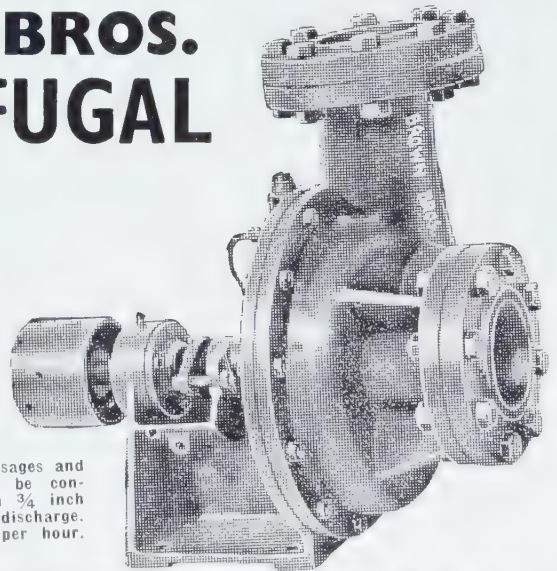
of newly-purchased animals until satisfied that disease is not being introduced, suitable nursing and special treatment of sick animals and the slaughter off of all chronically sick pigs are all valuable measures which can be put into operation without any specialised knowledge of the various diseases to which pigs are subject. On numerous farms these chronically sick pigs are seen. They are a direct menace and are frequently reservoirs of disease germs, having in many cases been affected with disease, partially recovering and remaining chronic carriers and spreaders of disease. They should be slaughtered.

All pigs killed off on account of disease should be promptly disposed of by deep burial or burning. The intact disposal of a carcass without spilling blood, unless a special post-mortem examination is carefully carried

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out, will prevent disease spread. If a post-mortem examination is held then all blood offal and carcass requires to be cleaned up, buried or burnt. Most farmers have healthy pigs because they pay attention to these aspects of disease prevention. Some have out-

breaks of disease in spite of their care; this will happen but there may be some weakness in their management of which they are unaware. Others take little care and get into difficulties; the remarks already made are intended especially for them.

Necrotic Sores

In regard to specific diseases such as necrotic ulcers in pigs this disease has been dealt with so often in the "Journal of Agriculture" that every pig raiser in New Zealand must be thor-

Save Regularly-

COPPER, BRASS, ZINC, LEAD, PAPER, CARDBOARD, RAGS, ALUMINIUM — but above all

SAVE RUBBER!

THE NEED IS VITAL
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WORLD'S NATURAL RUBBER RESOURCES!

To help replace this serious loss, old tyres and tubes and all useless rubber articles should be given up at once. Send old tyres and tubes to nearest Garage.

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Worn-out and useless rubber articles such as
TYRES — TUBES — Garden Hose — Hot Water
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Pouches—Toys—Bathing Caps — Belting—Cables
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—Jointings — Packings — Washers — Squeezers—
Air Cushions — Surgical Tubing — Syringes and
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TO MAKE THESE:

For the **AIR FORCE:** Rubber dinghies—Landing
wheels—Self-sealing tanks—Life-saving jackets—
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mobile repair shops, guns — Fittings for tanks—
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for steel helmets — Commando and Paratroop
equipment. For the **NAVY:** Insulated cable
and hose pipes — Range-finder fittings — Eye-
pieces for gun-sights. For the **MERCHANT**
FLEETS: De-gaussing equipment (to protect
them from magnetic mines).

What you should do

YOU THE HOUSEHOLDER: Search your
home for worn-out and unwanted rubber. Put
it out in a separate bundle, along with your
other salvage.

YOU THE MOTORIST: Every worn-out
tyre and inner tube is wanted. Take them to a
local garage for consignment to a Government
Depot; or put them out with other salvage.

YOU IN INDUSTRY: Make an intensive
drive throughout your plants, shops, business
premises of all kinds, for waste rubber. Collect
it together. Continue to save pending a later
announcement as to collection.

KEEP ON COLLECTING. One effort is not enough. Keep on collecting . . . little by little it mounts up to a huge total. All proceeds go to the National Patriotic Fund.

Arrangements for Collection will be announced later

ISSUED BY AUTHORITY OF THE MINISTRY OF SUPPLY

oughly conversant with it. Photographs of the disease have been shown so that no possible mistake could be made regarding its identification. The treatment by scrubbing and dusting of the sores with powdered tartar emetic is a specific cure which kills off the spirochaetal organism and permits normal healing of the sores.

"Blue Belly"

"Blue Belly" (Suipestifer disease) and allied diseases.—Concerning the rather baffling internal diseases of pigs which result in mortality from time to time, on good and bad premises and show a variety of symptoms depending upon the part of the animal's system most seriously affected, and which, in the present state of our knowledge of pig diseases are not easily cured and in many cases very difficult to prevent, the following information is given on the subject:—

While mass production of pigs is carried on under intensive or semi-intensive systems and while large numbers of animals are kept in close contact and confined under artificial conditions to suit man's needs, the germs of disease are liable to become concentrated and periodic outbreaks of this disease are more or less unavoidable. Outbreaks of this disease have been reported in big pig plants where the standards of housing, hygiene, feeding and management are as near perfect as possible. This does not imply that the position is hopeless. It is comparable with the human influenza situation. The pig disease germ is just as widespread as the influenza germ. It strikes just as unexpectedly and, like influenza it is controlled by taking the same suitable precautions regarding isolation and the prevention of spread. Like influenza this disease is well known.

A good deal of investigation into pig



diseases generally was carried out by Mr. D. Marshall, M.R.C.V.S., when stationed in the Waikato district when it was shown that most of the mortality was caused through this specific germ called bacillus suipestifer. For general purposes it may be said that this germ could probably be found on all pig premises. The exact conditions enabling the flare-up of the germ and subsequent mortality in pigs are so complicated that they cannot be defined. The particular symptoms set up by the germ when it invades the pig's system are easily recognised and depend to a very great extent upon the organs affected.

Forms the Disease May Take

1. Lung Infection: If the lungs are affected one would expect high temperature, redness of the skin of the belly and thighs, which is mainly a characteristic of the fever having no other relationship to the disease, and lastly and most important the peculiar

breathing difficulties associated with lung disease. The affected lungs and air passages pass through the various stages of congestion until pneumonia supervenes. In the congestion stage bleeding may take place sometimes relieving the affected animal. This bleeding results from congestion of the nasal, bronchial and lung membranes, just as the redness of the belly is due to high temperature. Bleeding always gives a temporary relief to congested areas. However, bleeding is not considered a cure for the disease and the fact that some recoveries take place following bleeding must be regarded more as a coincidence. Much depends upon the virulence of the germ and the resistance of the animal. Naturally in a fevered animal there is no desire to eat, but thirst may be present. As the organism is teeming in the blood and in the lungs, a septic pneumonia soon supervenes and the affected animals die quickly, or, if they recover, remain chronic lung cases, and per-

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severance with them is seldom worth while.

The Department has used drugs of the sulphanilamide group for the treatment of these lung cases and the results are quite promising. The drug however, is not generally available for

animal treatment and at present is reserved for the medical profession in case of an emergency. Consequently it will be necessary to wait for more suitable times before full advantage can be taken of the prospective treatment and cure of individual affected pigs.

The measures already mentioned, isolation, nursing and treatment of less seriously affected, slaughter and burial of seriously affected and maintaining a careful watch to prevent spread of infection are the lines along which results are likely to be obtained. In all lung troubles breathing difficulties make it inadvisable to drench animals with medicine. However, such medicinal agents as salts or oil, if required, may be taken by the sick pig when mixed in a little milk or gruel.

2. Stomach Infection: With the same germ attacking the digestive system there is again evidence of fever, loss of appetite, pinkness of skin, belly and underparts of the body, probably constipation at first, followed by acute diarrhoea. When diarrhoea sets in there is a falling in of the flanks, pigs have an empty appearance, scour continuously and generally are very thirsty, preferring to drink from stagnant pools and sewage rather than clean milk or water. Such symptoms as are here described will be reflected on a post-mortem examination by an acutely inflamed, reddened stomach, together with inflamed areas through the small bowels. Frequently large necrotic ulcers are seen on the lining of the bowels, particularly the blind gut, or this gut may show an acutely inflamed reddened lining throughout without ulceration. The droppings from such an animal are teeming with the germs, hence slaughter or isolation must be resorted to at once to prevent further spread of the disease.

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Delays through shortage of labour will be unavoidable. We advise you to place your season's order now for delivery later.

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As over 1,500 farmers from all over New Zealand have gone to the trouble of writing to me about the many benefits they have received from using the "BEVIN" Harrow, I really believe **I have got something which will at least alleviate your problems of labour and fertilizer shortage.**

In the first place, one stroke of the "BEVIN" will do more effective work than two or three strokes of the tripod-and-chain harrows; and also, as the benefits of the "BEVIN" are more prolonged, here lies a part solution of your labour problems.

As far as the fertilizing effect of the "BEVIN" is concerned, I quote you a letter written to me on the 9th July, 1942, by Mr. R. H. Perring, of SENTRY Hill, New Plymouth: "Before writing you I wanted to put your Harrows to a severe test, as I am one of those men who want to be quite sure of a thing before I recommend it. I harrowed a part of a paddock. The other part had farmyard manure, and the paddock was topdressed all over with artificial fertilizer. I asked several people which part had the farmyard manure, but no one could tell me. The part I harrowed is equally as good as the other, so I consider the 'BEVIN' Harrow is one of the best implements on the farm, especially when one knows the value of farmyard manure."

Well, I have got hundreds of letters on the fertilizing and manure-saving value of the "BEVIN," which have convinced me that my Harrow can help you. I invite you to try it for yourself, and, if you are not completely satisfied with the work and the results, under my written guarantee you can return it up to 12 months after the date of delivery.

PATIENCE IS A VIRTUE.

Believe me, your labour and fertiliser troubles are nothing compared to the problems I have in supplying harrows with reasonable promptness. I have plenty of worries getting materials and labour, and the position is much aggravated by ever-increasing orders. Even if you don't want a Harrow until next year, will you please send to me for particulars now?

Mr. D. H. Cullen, of Maungaturoto, has the right outlook. Writing on 30th September, 1942, he says: "If there is any chance of getting a 16 ft. set of your Harrows, will you supply me with same? **If I get them within the next 12 months, I don't mind.**" Mr. Cullen won't have to wait for 12 months; but he does appreciate both the value of the "BEVIN" and the precarious stock position.

SO FAR PRICES HAVE NOT RISEN.

Ever-increasing sales, and the elimination of travellers, have made it possible for me to sell without increasing prices. The prices of the "BEVIN" today are the same as when I first marketed the Harrow in January, 1937. It is worth far more than I charge. Writing on the 1st October, 1942, Mr. J. Pendray, of Manunui, says: "I consider every tine is worth a £5

note." This means that Mr. Pendray values the 7ft. Harrow, for which he paid £15 1s. 6d., at £75.

THE GOOD EARTH.

Mr. E. Corse Scott, of Mangonui, on 20/1/42 writes: "People are beginning to realise that the secret of Health—healthy crops, healthy stock, healthy humans—is living soil. Living Soil = Humus + Work. For work I know nothing better than the 'Bevin' Harrow. So good luck to you! And may you persuade more and more farmers, both here and elsewhere, to revitalise their pastures before the soil dies on them."

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Without obligation, please send me Full Illustrated Catalogue with details of the "BEVIN" Harrow, together with a copy of our written money-back guarantee.

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1 A 16/11/42

The first time the pig is seen to refuse its food it should be removed to the hospital or sick sty. A good dose of castor oil or other suitable laxative should be given. Provide new whole milk as the drink, and prohibit any access to sewage. Warm dry housing free from draughts is necessary. Early cases will respond to this treatment. Delay is fatal, so that whatever hope for success is entertained, the case must be regarded as urgent. There is no specific medicinal agent which can be recommended. Whether the drug referred to above will prove of any value in the intestinal form of the disease is rather doubtful at present, but experiments will be continued with a view to discovery of anything useful.

3. Blood Poisoning form: The acute septicaemia or blood poisoning form of the same disease affecting lungs, stomach and intestines, in fact all organs where the germ is demonstrated in the blood proves rapidly fatal in spite of any treatment. In such cases prompt slaughter of the affected animals and deep burial or burning of the carcasses to prevent spread of the disease is about the only treatment left to the owner.

Naturally in dealing with an outbreak on a farm, any sties vacated by affected pigs should be thoroughly cleaned out, sprayed with disinfectant, opened up to the sun and air and left vacant for a few weeks.

It may be poor consolation to owners having had experience of the disease to say that the same germ takes toll of many pigs in other countries such as the U.S.A. and Great Britain. This, however, appears necessary as some have the opinion that nothing is known about the disease and nothing can be done to lessen its incidence or prevent its spread. In some quarters there appears to be a tendency to throw up in despair rather than apply what knowledge there is known about the disease. This Division is in touch with work carried out in other countries with this and other diseases of pigs and whenever or wherever anything of value is available, the pig raiser will be fully advised.

Infectious Pneumonia

Another disease of pigs, which takes heavy toll upon occasions is that known as *Pasteurellosis*. This is a disease due to another variety of germ known as the *Pasteurella suis*. The disease is more particularly confined to younger pigs kept under poor conditions or on a low plane of nutrition. The body resistance is thus lowered and the germ, which may be said to be almost a normal inhabitant of the respiratory system, takes on the role of an invader, setting up a form of blood poisoning or septicaemia, resulting in a train of symptoms mainly affecting the lungs and heart. There is coughing, nasal discharge, excessive or dif-

ficult breathing and panting, double flank action, pleurisy and pneumonia, resulting in the death of many young and store pigs.

This disease may be easily introduced to clean premises through the purchase of pigs from saleyards; hence the wise precaution of isolating fresh purchases until they have settled down and the question of possible disease is beyond doubt. Even if an outbreak of this disease occurs, it is not generally regarded in so serious a light as suispestifer disease on account of the fact that it mainly attacks the younger pigs and those undernourished. Porker pigs, baconer animals and sows and boars have usually sufficient resistance to prevent their being attacked by this type of germ.

The actual germ responsible can only be demonstrated under the microscope; hence the advisability of forwarding suitable specimens to the Animal Research Station, Wallaceville.

Here again, there is no specific medicinal treatment of any value. Good nursing, hygiene, feeding, the use of cod-liver oil to build up resistance, the segregation and isolation of the affected to prevent spread, the isolation of all newly-purchased weaner or store pigs and such other preventive measures as may be applied under the varying farm conditions are the rational lines to follow.

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consignments of agricultural machinery have been made to South America, Africa and Canada.

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Production of Cocksfoot Seed in Southland

IT is by no means intended to create the impression that cocksfoot seed cannot be successfully grown and harvested in Southland. On the contrary, the very reverse obtains especially when good care and treatment have been exercised in laying down the crop. Southland is a province known for its ability to produce satisfactorily many types of grass and clover seeds, and cocksfoot seed production is not an exception.

Type of Land

Cocksfoot grows best on the better class of well-drained land and excellent stands should be obtained on good soil showing a gravel subsoil such as is found near the banks of the Oreti and Waiau Rivers. It is primarily a

By

W. L. HARBORD,
Fields Instructor,
Invercargill.

deep-rooting plant and consequently does not thrive on wet areas in which a high water table discourages the natural development of the plants root system.

How and When to Sow

For the successful establishment of a cocksfoot area the drill affords the best means of sowing. Drilling should be carried out during late November on a good seed bed which has been well rolled. The drilling should be as shallow as is possible with about twelve pounds cocksfoot seed per acre. The area should receive lime at the rate of one ton per acre. It is advisable to sow about three to four pounds white clover per acre with cocksfoot. Like ryegrass, cocksfoot feeds readily on nitrogen, and white clover affords one of the cheapest means of supplying this plant food. The clover also helps to fill in the gaps left between the drills and so obviates the risk of undesirable weed growth. Where possible the clover seed should be broadcast and the handiest method of sowing is to mix the clover with 2 cwt. super per acre (if available) and sow through a topdresser.

In Southland particularly, the reason for partial or even complete failure of the cocksfoot crop to germinate demands deep consideration. Quite fre-

This year many farmers in Southland are contemplating the establishment of areas of cocksfoot for seed production purposes. As little has been done in this direction in the province during the last ten years, it is thought a few points on the subject would be timely, especially as really well established seed production areas are few and far between.

quently seed sown has shown poor germination, but the main cause of the failure is due to adverse weather conditions immediately following sowing, thus causing the soil surface to become badly caked and ultimately preventing the young plants from pushing through the crust. Cocksfoot is not a hardy plant in the early stages and it is advisable to sow only when weather con-

ditions appear absolutely favourable. Some farmers prefer to use the broadcast method of sowing the crop as a means of eliminating the risk of caking. Certainly quite satisfactory stands can be achieved by the broadcast method, but it is considered that on soils likely to cake very shallow drilling will give as good, if not better, results.

Type of Seed

When deciding upon the type of seed to be sown, there are actually only two classes to choose from. One class, the ordinary commercial cocksfoot, is available, but growers are only being penny wise and pound foolish when considering this for seed production purposes. The other class is certified seed which can be bought in several grades and when contemplating seed production "the higher the grade the better the product" is a general rule to be remembered. With cocksfoot, Government Stock Seed is the highest grade, this being the C.23 variety produced by Lincoln College.

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We wish to advise all customers that we are now actively engaged on essential War Work.

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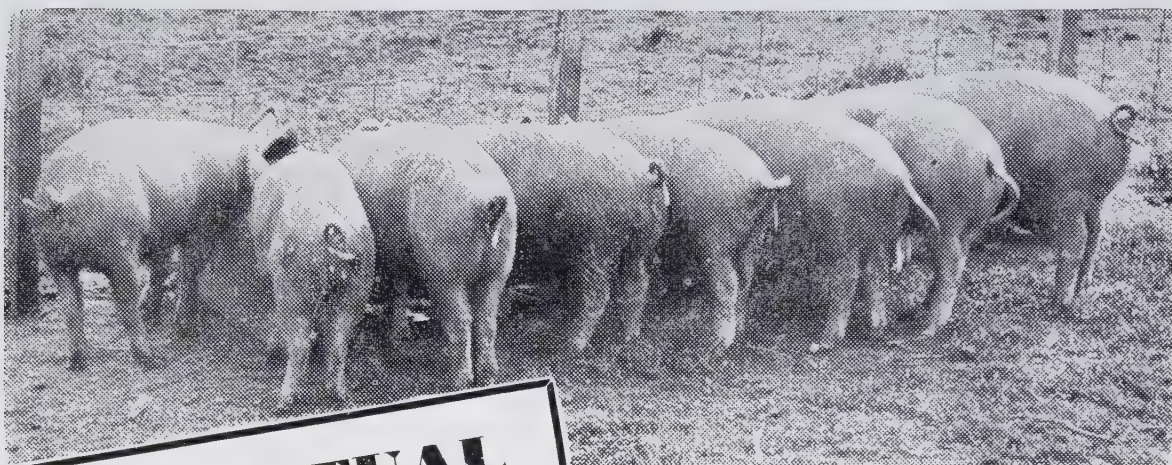
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**AT ACTUAL
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157 Piglets averaged
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(of these 86 were fed on Whey and Moose
and 71 were fed on Skim Milk and Moose).

WHATEVER their basic food
the addition of a ration of
MOOSE Meal with its highly nutri-
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content will keep your pigs healthy
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FLETCHER (N.Z.) LTD., P.O. Box 663, Wellington, Distributors to the trade.

For seed production purposes it is advisable to purchase, wherever possible, either Government Stock Seed or the next grade Pedigree.

When buying certified cocksfoot an important point is to make a careful scrutiny of the Purity and Germination certificate which must accompany the line to ensure that it has as low a percentage of ryegrass impurity as possible. Actually 5 per cent. of ryegrass impurity is permissible in some grades of certified cocksfoot, and as ryegrass impurities cannot be machine dressed from cocksfoot the aim must be to sow a line with none of this impurity.

Many farmers prefer a heavy sowing of seed, but with care exercised in the sowing, etc., it will be found that excellent results will be obtained in Southland with 12lbs. for drilling and up to 20lbs. for broadcast sowings. The crop should be sown in time to allow establishment before the early autumn frosts appear.

Management

Cocksfoot is a plant with a high crown which makes it susceptible to damage due to close grazing, frosts and hot drying winds. The aim must be to get the plants established as quickly as possible and when the area is for seed production it is best to keep it completely closed to stock. During each autumn a light grazing may perhaps be taken to utilise the leaf growth, but this grazing must at no time be allowed to become severe. It is well known that cocksfoot dominant pastures will, if only very lightly grazed, control weeds. Under grazing, cocksfoot will not form a dense sward and consequently weed entry is allowed. If cocksfoot is left ungrazed pure stands continue, but once the stand is opened up by grazing even for short periods in the winter such impurities as ryegrass and Yorkshire fog will appear. Being a heavy feeder of nitrogen it is as well to topdress the area each year with a nitrogenous fertiliser, especially if white clover has not been sown in the area.

In harvesting the crop the best stage to cut is when a few seeds can be knocked out of the ripest heads if hit lightly on the hand. At this stage the seed is fairly mature although greenish when rubbed out on the hand. The crop should be cut with the binder, stooked for about fourteen days and left in stack for at least six weeks before threshing.

Summary

1. Cocksfoot grows well on good well drained soils showing a gravel subsoil such as found near the Oreti and Waiau rivers.

2. Drill the seed very shallow.



The two rows shown are good average certified.

[L. W. Gorman, photograph.]

3. Twelve pounds of seed for drilling and up to twenty pounds for broadcast is sufficient.

4. White clover with cocksfoot fills in the gaps, prevents weed entry and supplies readily available cheap nitrogenous plant food.

5. For seed production remember that the gate needs to be closed to stock.

6. Harvest at the right time and stack for at least six weeks.

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SACKS

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LITTLE thought is necessary to bring home to everybody the important function of sacks and other jute goods in the economy of a country whose interests are dominantly agricultural. All our seeds, fertilisers and lime coming on to the farm require sacks, while much of our produce before marketing has to be bagged. It may, however, come somewhat as a surprise to many when it is realised that the lime and fertiliser industries alone use between them approximately ten million bags annually. If the areas of wheat, potatoes, grass seed and all the other types of produce are also considered, some idea of the immense numbers of bags used will readily be gathered.

It is a fair question to ask what happens to all these bags. The answer you already know. Tremendous numbers are wasted. That is the reason for this appeal.

Wastage

Though it may still be possible to import bags from Calcutta there is no justification for any wasting of our present supply. Importation means ships and if sacks are imported the space involved cannot be used for other purposes. Prices, too, are high, and ultimately the farmer will have to pay in hard cash for his failure to adopt a policy of "waste not, want not."

Any article which is not being employed to its fullest capacity is to some extent being wasted, thus, although a farmer may tie his sacks up carefully and leave them in a shed, during the time that they are performing no useful service, they are being wasted.

Care of Sacks

Although the methods of conserving sacks are in general well known, an article of this nature would be incomplete without some reference to them. All goods received in sacks should be stored in a perfectly dry place. This will preserve the sack and the goods inside it. When the sack is being opened care should be taken to avoid

knife cuts in the material of the sack. After the contents have been emptied the sack should be well shaken, and if by chance, it has become wet it should be hung out to dry. The **thoroughly dried** sacks can then be tied neatly into bundles of, say, a dozen and returned promptly to a sack merchant, lime company, or other dealer in sacks.

An Economic Loss

The arch-enemies of sacks are dampness and pests such as mice. Farmers generally will fully appreciate this and

in most cases will be careful to see that they don't lose money through these causes. A farmer who buys 50 tons of lime may be charged £31 5s for sacks if calculated at the rate of 12s 6d per ton. If he is credited with 10s per ton for all sacks returned in good order, he will receive £25 on their return.

For all sacks rejected he pays 12s 6d per ton—a cost very nearly as high as the lime he has bought. What farmer who has bought 50 tons of lime would think of tipping a ton or two on to the road, and yet how many lose an equivalent amount of money through careless handling of bags.

Apart from the actual physical means of saving sacks, much can be done by returning them to those places where the necessary plant and labour is available to carry out any reconditioning. After being returned to one of the sack merchants they are carefully sorted and can then be used for the particular purpose to which they are best suited.

A National Service

In giving their closest attention to this question farmers will not only benefit financially but will also be performing a service of great national importance. If anyone thinks it not worth while performing this service let him consider how he will continue his farming operations with no sacks.

Farmers, the remedy is in your hands. Either you do your part to preserve and conserve the present supply of sacks or suffer the consequences of a drastic shortage in the near future.

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Many soils of high-rainfall parts of New Zealand lack Lime, and contain large quantities of Iron and Allumina, which rob the farmer of about four-fifths of every ton of Water-Soluble Phosphates spread on these soils; a Basic Slag contains, among other minerals, large quantities of a non-acid chemical compound known as Calcium-Silico-Phosphate which, it is claimed, has the power of unlocking these dormant minerals from the soil. The phosphates of a Basic Slag cannot be locked up by these soils because they are already combined in a form easily digested by the root acids as they need them.

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Considerable economic loss results from the ravages of the sheep blowfly, particularly in the Merino and half-bred country of Marlborough and in Hawke's Bay, although a smaller number of cases of strike do occur in other sheep-raising districts of the Dominion. Not only is there loss of wool and loss of condition in struck

BLOWFLY STRIKE IN SHEEP

sheep but death of the animal will follow a severe strike which is not detected or treated early enough. The labour necessary for supervision and treatment of flocks, especially at the present time, contributes a great deal to the total cost to the farmer of this pest.

By

L. K. WHITTEN, Parasitologist,
Animal Research Station, Wallaceville.

THE fly which is responsible for the vast majority of strikes over the greater part of New Zealand is the common brown blowfly, *Calliphora laemica*. The greenbottle, *Lucilia sericata* is more important than the former only in Canterbury and Otago. The bluebottles, *C. quadrimaculata* and *C. erythrocephala* are of quite minor importance in connection with strike in sheep although they will infest meat and carrion.

Life History

During its lifetime the adult female fly lays about 1000 eggs in batches of 50-100 on carrion or on a susceptible sheep. Some flies lay living maggots, others eggs or maggots, depending on the temperature and humidity. The eggs are small yellowish-white elongated bodies; within one or two days they hatch out and the young larvae or maggots begin to feed actively. They grow very quickly and after two moults reach their maximum size in from two days to three weeks. The maggots have a narrow head and a broad posterior end on which can be seen two dark spots, the breathing

pores or spiracles which enable them to breathe while their heads are deeply buried feeding. After maximum growth is reached the maggots crawl away, seek a sheltered position or burrow into the soil where they become pupae, encased in hard shells, within which the tissues of the maggots are changed into those of the adult flies.

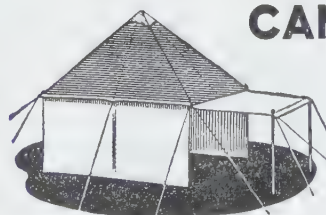
Under suitable conditions of temperature and moisture the adults emerge from the soil, dry their wings and fly away. The pupae may remain dormant over the winter or the adults may emerge in 1-2 weeks during the summer. The adult females require a protein meal before they begin laying eggs, usually three days after emergence. The life cycle from egg to egg takes about one month in the summer time and the adult may live at least a month during which time it can travel considerable distances—ten miles and more.

Blowfly Strike

The common types of strike encountered in New Zealand are crutch strike, tail strike, body strike, head strike in

rams, and a small proportion of infestations of wounds, shear cuts, accidental wounds, marking wounds, facial eczema lesions, footrot lesions, and prolapsed vaginae. Crutch strike is usually associated with urine soiling and occasionally with soiling with faeces. Repeated soiling by a misdirected stream of urine from an irregular or distorted vulva, or by the presence of medial skin wrinkles on the breech produces, after prolonged wetting of the skin with subsequent decomposition, inflammation and exudation, an area which is highly attractive to the fly.

Body strike may occur on any part of the body other than the crutch but is most frequent on the back in the region of the withers. Very often it is associated with "fleece rot" or



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"water rot." Back strike or body strike is relatively more important in New Zealand than it is in Australia. It is usually encountered in Merino and halfbred hoggets after a period of heavy rain when the fleece remains moist and high humidity prevents thorough drying.

Prevention

In the Merino where wrinkliness of the breech is an important factor in producing a susceptible state, the logical method of attack is to breed for plain bodied sheep. This would be a long and costly process and as most New Zealand Merinos have little development, as compared with those of Australia, this aspect of the problem is less important than in the latter country.

The surgical removal of offending skin folds which would become soiled with urine has been used with considerable success. Folds running down each side of the centre of the crutch are removed with shears starting well up towards the side of the tail and finishing 2-3 inches above the inside of the hock. The sheep is held on a rail as for docking, but the hocks should be bent or the folds will be obliterated as the skin is stretched. The folds are raised with the fingers

so that half an inch of skin is removed on each side of the base of the fold. If part of the bare skin is included in the fold, the latter should be rolled outwards so that none of the bare skin is removed. It is a simple matter to remove the skin without damaging the deeper tissues and the wounds produced, if reasonable care is taken with cleanliness, heal completely within a fortnight leaving an otherwise susceptible sheep quite as immune as one naturally plain in the breech.

Australian workers have shown recently that the length at which the tail is docked has a considerable effect on the incidence of breech strike. Sheep with tails four inches long suffered less than those with two-inch tails, while those with tails docked close to the buttocks suffered most. It appears that the longer tails press the breech wrinkles apart and so reduce the liability to wetting. In New Zealand where vulval deformity is a more important factor in urine soiling than the presence of breech wrinkles, the effect of tail length may be different from that observed in Australia. Macfarlane suggests that a tail which extends beyond the upper third of the vulva may produce distortion and subsequent soiling of the breech.

Shearing and Crutching

Shearing renders sheep insusceptible to fly strike for some considerable time to where possible this should be done just before the worst fly period. In Marlborough ewes in particular should be shorn before Christmas if necessary leaving wethers and dry sheep till later.

Crutching, the removal of wool from the breech, above the tail and well down the back of the hind legs, is the best method of controlling crutch strike. Crutching of lambs in December or early January will give considerable protection when fly waves occur in late January and February. Crutching normally gives protection for about six weeks.

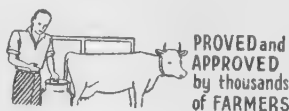
Jetting

Jetting is a practice which has been developed and used for some years in Australia with excellent results. Two to three pints of a one per cent. suspension of calcium arsenite is forced into the wool of the crutch, at a pressure of 40-90 lbs. per square inch, from a pump which may be hand or power driven. Fluid which drains away may be re-used if a properly constructed jetting race is available. Jetting will give protection for about a month and

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has the advantage that it can be applied at short notice, requires less labour and expense than crutching and can be carried out by ordinary station hands. It can be applied at the beginning of a fly wave in which case small strikes, less than three inches in diameter, are jetted but considerable risk attends the jetting of severe strikes. Intermediate strikes may be jetted at reduced pressure.

Dipping

Dipping as carried out for the destruction of ked and lice has little or no effect in blowfly prevention.

Trapping

Trapping of blowflies has little effect on the incidence of fly strike in sheep unless the concentration of traps is so great that the procedure becomes uneconomic. Fly traps may be used to advantage close to dwelling, sheds, and slaughter-houses to reduce the fly population in the immediate vicinity.

The trap most suitable for this purpose is the Western Australian Trap which can be made easily from two



The "Western Australian" blowfly trap.

kerosene tins and wire gauze. It consists of a tin, the top and three sides of which have been largely replaced by gauze. The remaining side has a small trap door for the removal of dead flies. Into this tin is soldered a gauze pyramid with an opening at the top large enough to admit the blowfly. The trap is then mounted on a second tin which contains the bait, usually raw meat, liver or offal with sufficient water to keep it moist. The addition of 3 per cent. sodium sulphide solution makes the bait more attractive and more lasting. On each side of the bait container a horizontal slit is cut three or four inches long and half an inch high. The flap of tin is not removed but bent inwards to make a slightly inclined platform on which the flies can alight before entering the trap. After feeding on the bait the flies fail to return through the slits but are attracted upwards by the light, pass through

Vaccination Against Contagious Abortion

THE attention of dairy-farmers who are having trouble with contagious abortion is again directed to the **free vaccination** of calves being made available by the Department of Agriculture. This was described in the September issue of the Journal. In order to enable the largest possible number to participate, the closing date for application has been extended to the 30th November.

Applications on the form printed below should be forwarded to the Director, Animal Research Division, Department of Agriculture, Wellington.

Application for Vaccination of Calves Against Contagious Abortion

Name of Owner

Address

Cows in herds: 2 year olds..... 3 years and over.....

Yearling heifers:

Heifer calves born in 1942:

*(a) Bred on farm.....

*(b) Outside purchase.....

Number of cases of abortion:

1941 2 year olds..... 3 years and over.....

1942 2 year olds..... 3 years and over.....

Note: An abortion is defined as any calf born under 8 months which failed to live. Abortions should be recorded for the year in which the cow would normally have calved.

I hereby apply for vaccination of my heifer calves as shown above and agree to provide annually details of abortions occurring in my herd and to report promptly abortions which occur in vaccinated animals and, where possible, to supply specimens of calves aborted by vaccinated animals.

Signed..... Date.....

*Give individual numbers or other identification marks, and dates of birth on a separate sheet.

the opening in the top of the pyramid into the trap above, from which they are unable to find their way out again. Dead flies are removed periodically and the bait renewed every 7-10 days.

Poison Bait

Poison bait can be made by taking half a 40-gallon drum into which is placed half a sheep carcase which has been left for 2-3 days to become thoroughly putrid. It is then half covered with 1 per cent. arsenic solution. The carcase is moistened from time to time by bailing the fluid over the exposed portion. The bait will attract and destroy flies for at least two months when it should be replaced. The drum should be fenced off to avoid risk of poisoning other animals and should be placed in a sheltered position such as the lee side of a tree.

Carcase Disposal

Carcases of stock and game afford an excellent breeding place for large numbers of blowflies and should be destroyed as soon as possible after death. Burning is the best method of disposal and where firewood is scarce spraying with one-third to one-half a gallon of crude oil or sump oil will aid in completely destroying a sheep carcase. Burial alone is of little real value in

fly control as flies are still able to emerge when buried several feet in loose soil. Burial after poisoning is quite satisfactory and for this purpose arsenical dip, or borax mixed with equal parts of dry sand or soil can be applied by means of a shaker. Spraying with a half per cent. solution of sodium arsenate is also effective. Poisoning as above, even without burial is useful if the carcase is turned and both sides dusted, paying particular attention to the mouth and tail regions where most of the eggs are laid.

Disposal of Infested Crutchings

The disposal of crutchings is much more important than carcase disposal, because in the case of crutchings every single maggot may develop into a fly which becomes a potential danger to sheep, while in a carcase these must compete against other species which rarely cause fly strike. Crutchings should be either burned or poisoned with 1 per cent. arsenic. One simple method is to crutch the sheep on a square of strong canvas from which crutching and maggots can be easily collected and burned or poisoned.

Treatment

The treatment of fly strike involves the removal and destruction of the

maggots from the struck area. This is best effected by striking repeatedly close to the area with the flat of the shears and so jolting the maggots out of the strike. A suitable dressing is then applied.

The perfect dressing which is non-irritant, promotes healing without excessive scab formation, is cheap and easy to apply and which will kill the maggots and repel the adult flies, has yet to be discovered, but the following preparations have proved very valuable in the treatment of strike.

5 per cent. bluestone has been very popular but has the disadvantage that it stains the wool.

5 per cent. zinc sulphate is quite as good and staining is avoided although neither of these preparations penetrate the wool very easily.

Dry boric acid dusted on the area is simple and effective.

Glycerine diborate, C.B.E., and B.T.B. dressing developed by the C.S.I.R. in Australia are effective but at the present time the ingredients are either unobtainable or prohibitive in cost.

The New South Wales Department of Agriculture recommends—

4 per cent. phenol crystals in whale oil with or without the addition of 5 per cent. carbon tetrachloride as a repellent.

A satisfactory dressing can be made as follows:—

Zinc sulphate 10 ozs.
Powdered starch 4 ozs.
Carbon tetrachloride 8 ozs.
Water 7 pints

The zinc sulphate is dissolved in the water and the starch added and gently heated until dissolved and the mixture becomes a watery jelly. When cool the carbon tetrachloride is added and thoroughly mixed.

Another satisfactory preparation can be made by substituting boric acid for zinc sulphate in the above formula.

The application of dressings can be carried out effectively by the use of a brush which can be made by wiring horse hair to a suitable handle about eight inches long and cutting off the hairs at a length of about four inches. Treatment should be carried out as early as possible. During a fly wave close supervision of the flock is essential and, if possible, struck sheep should be drafted into a hospital paddock where, if necessary, they can be re-treated without yarding the remainder of the flock.

SUBSCRIPTION RATES.

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Cocksfoot Growing for Seed Purposes

COCKSFOOT growing for seed purposes has not been generally attempted by farmers in South Otago, but isolated cases are known where satisfactory crops of cocksfoot seed have been harvested year after year by growers in this district.

Cocksfoot does well on a class of rather dry or well-drained, sharp type of land of which parts of Pukeawa, Greenfield, etc., are typical, and this type of land appears to be desirable although not as essential for seed production as for good cocksfoot pastures. Consequently a field of this nature should be chosen, or if soil of this type is not available a well-drained, dry,



Single plants. *Right:* A good plant of College (C23) cocksfoot showing the dense crown of fine leaves. *Left:* A good plant of Certified Akaroa cocksfoot.

By

A. F. GREENALL,
Instructor in Agriculture,
Balclutha.

sunny field which has been adequately limed and not cropped out is recommended.

An important consideration with cocksfoot seed production is the maintenance of a standard free of weeds and other grasses, in particular ryegrass. Ryegrass seed cannot be completely separated from cocksfoot seed, and as a consequence difficulty may be experienced in dressing seed to the standard of purity required for certification. Hence the preliminary preparation of the ground should be planned to germinate and kill all grass and weed seeds present and to prevent the introduction of fresh grass and weed seed prior to and after the sowing of the cocksfoot. Winter feed crops such as rape, kale, turnips, or swedes are

probably the best preparation, as inter-cultivation, followed by feeding off largely reduces the grass and weeds if properly carried out. It is inadvisable to feed seeded hay on such fields either before or after cocksfoot is sown as impurities are introduced.

It is imperative, from what I have seen, to sow down cocksfoot for seed without a cover crop. In particular, rape or turnips should not be sown with cocksfoot as extensive damage accrues during the slow establishing stage when sheep are feeding off, or the eating of the roots results in weed establishment.

Seed

The best certified cocksfoot seed available is recommended and can be either Akaroa, Plains or Certified C 23, a new leafy strain developed by Lincoln College. It is desirable to sow

from 2-3 lbs. of Certified White Clover with the cocksfoot in order to maintain the nitrogen status of the soil and the vigour of the stand. Red clover or any very leafy clover should not be sown as these form a dense bottom which interferes badly with the cutting and drying of the crop. Examine the Purity and Germination Certificates of the cocksfoot and clover seed sown to

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make sure of the absence of ryegrass or other undesirable impurities.

Sowing

Early autumn, say, February, is probably the best time for sowing as the

cocksfoot has a chance to establish during a period when weeds are not so quick growing, and has a good foothold for a quick growth the following spring.

Approximately 20 lbs. of cocksfoot seed per acre should be sown, preferably drilled in. The ground should be worked firm and fine and rolled before drilling. Drilling should be as shallow as possible and be followed by a light cover harrowing. As much manure as the fertiliser rotary scheme will allow should be sown. Drilling the cocksfoot results in a better, quicker and denser cover, and tends to eliminate the formation of a tussock standard of cocksfoot.

It is inadvisable to attempt to graze the stand of cocksfoot for the first few months. A very light grazing can begin in late winter or early spring, and the stand should be subsequently

grazed only for a month or two each winter.

Harvesting

The harvesting of cocksfoot is in line with that carried out in respect of other grass-seed crops. The crop is cut with a binder, stooked, and stacked, and after a period in stack is threshed. During hot weather and the heat of the day it is common to thresh out of stook, but bright weather must occur before stook threshing is attempted.

Cocksfoot does not shake as easily as ryegrass but heavy wind alternating with wet weather will cause a serious shake. The tendency to cut on the green side must be avoided however, as low germination and light bushel weight is likely to result.

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IMPORTANCE OF CERTIFIED SEED

Results From Spring-Sown Pasture Trials in the Tauranga District

THROUGHOUT the Tauranga District a fair acreage of maize is still grown. Crops are harvested from May to July, after which the stalks are usually grazed before the land is again put under the plough.

At this stage farmers are confronted with a definite problem in bringing these areas back into production. A choice of four courses is open to them—the land may be fallowed prior to sowing down in the autumn; they may grow a spring sown supplementary crop; the area may be laid down in a spring sown temporary pasture of Ital-

The general layout of each trial was as follows:—

(a) A plot with ordinary certified seeds.

(b) A plot with pedigree strains of seed, and

(c) A plot sown with some of the farmer's seed mixture.

The standard mixture used in (a) and (b) was as follows:—

	Per acre
Perennial rye (certified or pedigree)	25 lb.
Italian rye	10 lb.
White clover	3 lb.
Paspalum	6 lb.

Trial A, the farmer sowed the following mixture:—

Certified perennial ryegrass	15 lb. per acre
Certified cocksfoot	5 lb. "
White clover	2 lb. "
Red clover	2 lb. "
Timothy	2 lb. "

In this trial the certified and pedigree plots gave a much better strike, the Italian rye and heavy seeding of perennial rye giving a quick dense cover over the ground. The pedigree plot was superior to the ordinary certified one in sward density and speed of growth.

There was some weed present in all plots with the farmer's sowing having easily the most. His sowing of 15 lbs. rye, the only rapidly establishing grass in his mixture, had not been sufficient to give a rapid establishment of the sward.

Trial B, the following farmer's mixture was sown:—

Certified perennial ryegrass	15 lb. per acre
Certified cocksfoot	12 lb. "
Red clover	5 lb. "
White clover	2 lb. "
Italian ryegrass	2 lb. "
Prairie grass	3 lb. "

In this experiment results were almost identical with those obtained on Trial A. Weeds came up in profusion, particularly Californian thistle, amaranthus, dock and fathen. Again, the certified and pedigree plots, owing to their having a heavy sowing of vigorous, rapidly establishing ryegrass, had far less weeds.

Trial C, the following farmer's mixture was sown:—

Certified perennial rye	10 lb. per acre
Meadow fescue	6 lb. "
Cocksfoot	6 lb. "
Crested dogstail	2 lb. "
Red clover	4 lb. "
Timothy	2 lb. "
Crimson clover	2 lb. "
Lucerne	1 lb. "
Subterranean clover	1 1/2 lb. "
Paragon turnip	1 lb. "
Prairie grass	2 1/2 lb. "

This trial came up a dense mass of amaranthus. At first it was thought that the field would have to be ploughed up and resown, so dense was this weed. Both certified and pedigree plots had far less of this weed than the farmer's sowing with the pedigree plot showing up particularly well. The farmer mowed the amaranthus a couple of times and finally got it under control. His sowing then came up a dense mat of crimson clover and red clover 18in. in height. At this time there was an excellent rye-white clover sward on the certified and pedigree plots. The field was cut for hay, and the aftermath or red clover came away so strongly that a second cut of hay was obtained.

The position after the trial had been down twelve months was that the farmer's sowing had given a thin open sward with over 50 per cent. of bare ground. Red clover was dominant with extremely weak grasses while the certified and pedigree plots had excellent rye-white clover swards.

It is interesting to note that in no case had paspalum established strongly.

Conclusions

From the above trials the following conclusions may be drawn:

- (1) Where spring sowing of permanent pastures is practised the inclusion of liberal quantities of certified perennial ryegrass, Italian ryegrass, and white clover is very desirable.
- (2) Omit smothering plants such as red clover from a spring sown pasture mixture.
- (3) Use only the best certified strains of seed.

By

A. V. ALLO,

Instructor in Agriculture,
Whangarei.

ian ryegrass and red clover; or they may elect to sow down in permanent pasture.

The latter course is frequently adopted with very variable degrees of success. Apart from the vagaries of climate the general tendency of cropped land to run to weeds presents a serious problem in this district.

Results of Trials

During the spring of 1938 a series of trials were laid down to obtain information on the control of twin cress and arising out of these trials, some useful information on spring establishment of pastures was obtained.

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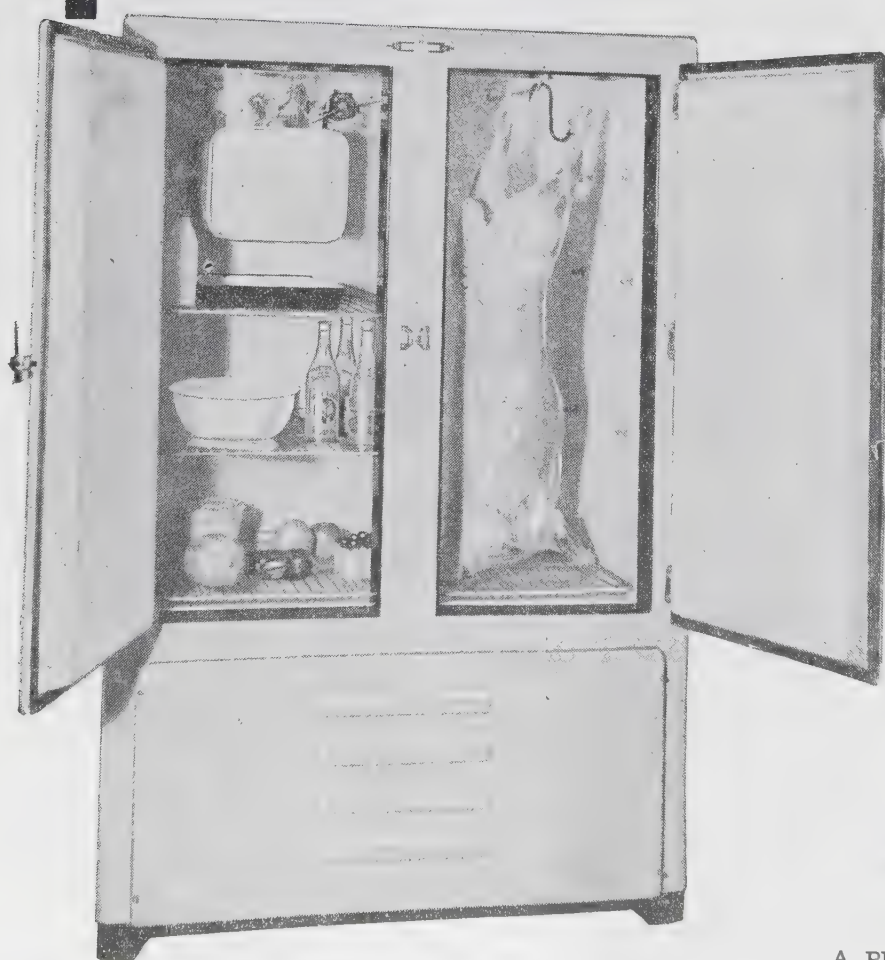
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Possibilities In The

Reclamation of

Dredge Tailings



The Barrytown Dredge.

By

A. D. MERCER,
Fields Instructor, Greymouth.

AMONG the dozen or so gold dredges operating on the West Coast of the South Island are one or two, such as Barrytown and Snowy River, making some attempt to solve the problem of the ultimate utilisation of what in most cases are mere heaps of boulders. In these two cases the tailings are not stacked, but are left more or less level behind the dredge, and except in some swampy areas at Barrytown, consist of shingle with some admixture of coarse sand and small pockets of finer sand and silt where water accumulated.

In the lighter rainfall areas it would seem a hopeless proposition to induce any useful vegetation on such a medium, but where lack of moisture is not likely to be a limiting factor it was considered that regrassing might be attempted.

able nitrogen in the tailings for the use of plants. In the spring of 1940 an area of a quarter-acre was cleared of small roots and timber lying on the surface and laid out as in the diagram, the surface harrowed and lime and fertilisers applied. All fertilisers were at the rate of 3 cwt. per acre and carbonate of lime at 1 ton.

No Manure.	Super.	Amm. Super.	Blood and Bone.
Lime	Super + Lime	Amm. Super + Lime	Blood and Bone + Lime

Six weeks later, in September, grass seed was sown over all plots at the rate of 36 lb. per acre, the mixture including perennial and Italian ryegrass, cocksfoot, timothy, crested dogs-

Experimental Areas

On the Snowy River tailings a small area has been sown in blue lupins to be fed off by stock as a preliminary measure to build up fertility to some extent before sowing to grass. At Barrytown, however, where there is a larger proportion of fine material, experiments on a small scale were laid down to determine the possibilities of grassing the tailings without any preliminary treatment apart from various fertilisers.

Fertilisers Used

The choice of fertilisers to be employed in the trial was determined by the known deficiency of lime and phosphate in the soils of the district and by the fact that the thorough washing of the material in the dredge was not likely to leave much avail-



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View of tailings with experimental plots in the foreground.



Foreground, portion of ammoniated super plot. Background, ammoniated super plus lime.

tail, browntop, Montgomery red clover and white clover. A fairly good strike was secured, but by the end of October it became apparent that on all the unlimed plots the young plants were dying out.

Nearly two years after laying down, and with no further application of

lime or fertiliser after the initial dressing, the results on the best of these plots are such as to justify attempts on a larger scale to reclaim areas which will otherwise lapse into a wilderness. An important point is that grassing must follow close behind the dredge, otherwise rushes, blackberry

Results

By the end of the summer results on the various plots were as follows:—

No Manure	..	..	No plants surviving.
Lime	..	..	A few healthy plants of red and white clovers.
Super	..	..	Very few sickly clover plants, little better than "no manure."
Super + lime	..	..	Good cover of white clover, some red clover, a little grass.
Ammoniated super	..	..	No better than "no manure." Some volunteer fog and lotus major.
Amm. super + lime	..	..	Good cover of white clover, some red, small percentage grass.
Blood and bone	..	..	A thin stand of grass and clover.
Blood and bone + lime	..	..	Fair cover of grass and clover with a larger proportion of grass than other plots.

Cattle had access to the area all the summer, while it suffered also from the depredations of hares so that no strong growth was apparent. All plots were equally well grazed, though the only grazing available was on the limed half of each plot. The best was the ammoniated super plus lime, in that the sward was denser, of a slightly better colour and with a somewhat higher proportion of grasses than the next best plot, super plus lime.

Sward percentages at this time:—

Super + lime	..	..	Grass	12%	Clover	70%	Bare Ground	18%
Amm. super + lime	..	..	"	15%	"	70%	"	15%
Blood and bone + lime	..	..	"	20%	"	60%	"	20%

The area was open to grazing stock all through the following winter and summer, the position in May, 1942, being as follows, points allotted on a 0-10 scale, representing the merits of each sward.

No manure	..	..	Lotus major, fog and brown top establishing	..	0
Lime	..	..	Thin cover of white clover, some ryegrass and timothy	..	4
Super	..	..	Lotus major establishing with some volunteer white clover	..	3
Super + lime	..	..	Good sward of white and red clovers, rye, cocksfoot and timothy	..	8
Amm. super	..	..	Some lotus major, fog and volunteer white clover	..	3
Amm. super + lime	..	..	Good mixed pasture	..	9
Blood and bone	..	..	Some white clover, ryegrass and lotus major	..	3
Blood and bone + lime	..	..	A fair mixed sward but not dense	..	7

and other weeds soon become established and prove costly to eradicate.

The cost of clearing small roots and timber off the surface, levelling certain inequalities, application of lime, fertiliser and good seed should not exceed £7 per acre.

Repairing Tanks

"H.E." (MERCER):—

My galvanised tanks have become useless through corrosion and rust, although they have been newly installed just three years ago. The trouble is caused by the water on my place. The water apparently contains either too much iron or something else. It is spring water, which collected in a dugout, is pumped up to galvanised tanks and from there distributed to water-troughs for cattle as well as to the house for human consumption. I should like to know if there is perhaps any chemical to counteract the corrosion and if possible to purify the water.

FIELDS DIVISION:—

A cheap and efficient method of repairing tanks which become leaky through water containing corrosive minerals is described on page 237 in the September, 1941, issue of the "Journal of Agriculture." The article is written by Mr. P. S. Syme, Instructor in Agriculture, Warkworth, and he illustrates the method adopted by a farmer in the Warkworth district. Briefly, the method is to treat the holes and weak places from the outside with alternate coats of water-proofing paint and cheese cloth as follows:—

- A covering of water-proofing paint.
- A covering of cheese cloth stretched evenly over the part.
- A covering of water-proofing paint.
- A covering of cheese cloth as above.
- A covering of water-proofing paint.

Where the metal around a hole is very thin, the edges are held in place from the inside while the first coats are applied. When the various patches have been completed, a coating of the paint is then applied to the inside of the tank.

Tanks which previously only lasted 2½ years and have been repaired in this manner have given a further three years of trouble-free service and appear to be good for many years more.

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Valuable Cover

Crop in Orchards

By

M. DAVEY,
Orchard Instructor, Masterton

IN old-established orchards where the dimensions of the trees exclude light and sunshine, many of the plants most commonly used for cover cropping in orchards such as oats, lupins and tares do not thrive sufficiently well to provide an adequate weight of humus when turned under. With this disability in view a trial of subterranean clover was made in the orchard of Mr. J. H. Kidd, Greytown, in which peas, tares, blue lupins and oats had been tried previously without satisfactory stands resulting. The soil in this orchard consists of a friable loam in which most types of legumes grow well. In mid-March, 1939, a $\frac{3}{4}$ -acre block containing large and overlapping apple trees was sown with subterranean clover, approximately 3lb. of seed being sown to the area.

The clover germinated with the first substantial rain following sowing.

Early in the following spring a vigorous growth took place, the crop showing somewhat patchy due to the young plants being smothered by fallen leaves. Good growth was

maintained until about mid-January by which time the stolons or runners had covered most of the ground. After the plants had died down discing was employed but owing to the tough condition of the stems a good coverage was not effected. In consequence the ground was cultivated, resulting in the re-establishment of a splendid stand of seedlings on the first autumn rains. This second crop was much more vigorous than the first, probably owing to the ground being inoculated by the original plants. Good growth was maintained throughout the following winter, resulting in a dense carpet of vegetation. During November while the crop was still succulent it was successfully disced under and the sec-

ond self-sown crop subsequently made good headway. Features of the trial have been as follows:—

1. The tolerance of the clover to densely-shaded conditions, the plants thriving close up to the trunks of the trees.
2. The conservation of moisture by the mat of foliage.
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The extraordinary increase in regeneration of the plants by self-sown seed suggests that 1lb. of seed to the acre would give equally good results and that some cultivation may ultimately become necessary in established crops to avoid overcrowding of the plants.

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Veterinary Notes for the Farmer

Yew Poisoning

VARIOUS species of plants have from time to time been associated with mortality in stock. In many cases where deaths have taken place from otherwise unaccountable causes, grave suspicion has been entertained that the mortality was due to the ingestion of certain plants, although the evidence has been insufficient to warrant a definite diagnosis. Other instances occur where abundant proof exists that the plant in question is of a poisonous nature and that death has been due to the stock eating it.

Included in this group designated "poisonous plants" is the tree technically known as *Taxus baccata* and commonly called English Yew. Numerous instances are recorded of mortalities having occurred as a result of stock eating the leaves which contain the very toxic alkaloid taxine. Among the several varieties of yew is included that known as Irish Yew or *Taxus fastigiata* which has also been associated with death among stock.

Death Generally Rapid

A feature of yew poisoning is the rapidity with which death occurs.

Generally the period which elapses between the time at which the plant is eaten and that at which death ensues is very short, in fact in some cases the animal will drop dead while in the act of eating the plant. Where death is less rapid the animal may show symptoms of blowing and trembling before eventually collapsing.

Although this is the general rule cases occur in which death takes place a considerable number of hours after the plant has been eaten. This is seen in the following case.

Case in Detail

Thirty calves were bought in the saleyards on June 3, and that evening were put into



a section used as a recreation park, the intention of the owner being to hold them there for the night. Growing in the park were numerous trees and shrubs, among them being English yew trees of considerable age and height, pasture in the park was very short. Next morning seven of the calves were found dead.

As the remaining 23 calves evidently appeared quite healthy, they were put into the saleyards on June 4 where they were bought by a local farmer. The calves were transported to the purchaser's farm on the evening of the 4th, but the farmer was not present when they arrived; next morning he found two calves dead on the unloading bank at the farm and three others dead in the paddock.

The dead calves in the park were examined on the morning of the 5th, also an examination was made of the shrubs and trees growing there. From the examination it was evident that the foliage on the lower part of an English yew tree had been recently chewed.

On examination of the live calves at the farm to which they had been brought, one appeared sick. The calves were driven down the paddock towards the yards and while this particular calf was being examined one of the other calves which had appeared quite healthy and had been grazing a few



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minutes previously, staggered and collapsed; it was dead within three minutes, no previous symptoms having been shown. A post-mortem examination of this calf revealed only slight inflammation of the true stomach (abomasum) and small bowel, the amount of yew found in the rumen was not so great as that found in some of the others which died.

Post-mortem examination of one of the calves which died on the farm the

previous night (June 4) revealed acute inflammation of the abomasum and a lesser degree of inflammation of the small bowel, the rumen contained a large amount of the leaves, stalks and seeds of the plant which was definitely identified as English yew.

The remaining calves were not examined again but the owner reported that between the 6th and 7th three of them fell over when being moved in the paddock, but these recovered.

The above case is interesting from the point of view of the period which elapsed between the time the plant was eaten and that at which the last calf died. From the post-mortem examination it would appear that this calf had not eaten as much as the others which died earlier, this may have had some bearing on the length of time which elapsed before death took place. No doubt the calves were hungry, having been in the saleyards during the day before being put into the park in the evening, and as feed was short the animals would be attracted to the shrubs and trees.

access to areas where certain trees well known to be poisonous exist, but it must be realised that besides these well-known varieties, there are others with which many people are not so well acquainted. The risk in allowing stock to graze in places where it is possible for them to chew shrubs or plants must constantly be guarded against unless the plants are of varieties known to be non-poisonous for stock. The risk is much greater where feed is scarce or where hungry animals are turned out in such places. Shrubs or trees which are ignored by stock when other feed is plentiful, become attractive when there is little else to eat.

Many instances have occurred where mortalities among cattle have taken place as a result of eating clippings from garden hedges or trees, where these have been deposited in paddocks where stock were grazing. This at all times is a dangerous practice as there may be poisonous plants included in the clippings.

—H. DOYLE, M.R.C.V.S.,
Veterinarian, Hamilton.

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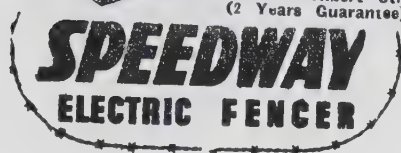
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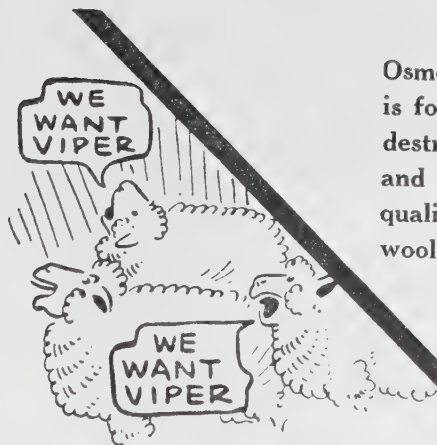
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Answers to Correspondents

Arthritis in Pigs.

"H.C.H." (KAUKAPAKAPA):—

Would you please give me any information regarding the cause and treatment of arthritis in pigs. I had a litter of eight pigs in December last, of which seven were affected after weaning. They always had a good dry bed, and had green food and meat meal and milk before weaning. They were not let outside until weaned, when they were shut up each night.

I have not had any trouble before and, having only a few pigs they are well looked after.

LIVESTOCK DIVISION:—

The causes of arthritis may be:

(1) Bacterial, due to such organism as the colon, the swine erysipelas, the abortion, the tubercle and necrosis bacilli.

(2) Mineral deficiency, most commonly of lime and phosphates.

The particular case described in your letter would most likely come under No. 2 category.

It has been estimated that a three months' old pig requires 1-3rd ounce of lime daily; even if this should be present in the food its absorption, however, into the system is not possible in the absence of Vitamin D. Where animals are freely exposed to sunlight they manufacture their own Vitamin D; failing such exposure its lack is met by supplying whole milk or cod liver oil.

A suitable mineral mixture for pigs is as follows:—

Ground Limestone ..	25 lbs.
Steamed bone meal ..	25 lbs.
Common salt ..	5 lbs.
Phosphate of iron ..	$\frac{1}{2}$ lb.

A teaspoonful of this mixture should be given in the food of young pigs daily, working up to one table-spoonful for adult pigs.

Cod liver oil should be given at the rate of half an ounce per pig per day before weaning, increasing to one ounce for at least two months after weaning. Its use should only be necessary in the winter litters.

If any further trouble of a similar nature should arise, it would be advisable to send specimens to the Superintendent, Animal Research Station, Wallaceville, Wellington, a covering letter being sent at the same time.

Paralysis in Cows

"J.D." (NELSON):—

We have trouble each season with cows which get a form of paralysis in the legs, which makes them collapse. It usually comes when they are just going to calve or just after they calve. The first one we had down was an old

cow which went down three days before calving, and when the calf was born it was born dead. She never got up for five days after that, and when she did she was only up for 12 hours, and then she went down for a night, but she was up the next morning. The last one which was down was a young cow which has been down twice in succession. We treated her by giving her a drench of liniment and milk and by rubbing her back with turps and linseed oil. Could you tell us any better method of cure, what is the name of the paralysis and can it be stopped before calving?

LIVESTOCK DIVISION:—

The commonest cause of cows going down just before or after calving is milk fever. The first cause of this is obscure, but a rapid drop in the calcium content of the blood occurs and is responsible for the symptoms of paralysis, etc. It is treated by pumping up the udder or by calcium drenches or injections.

Another form of paralysis much less common occurs in cows, usually before calving, in which they go down but remain otherwise quite bright, feed and chew the cud. This does not show

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a calcium shortage, and is best treated by good nursing, with plenty of molasses and perhaps one or two doses of 2 drams powdered nux vomica. The cause of this is not known.

Another type of trouble in which there is dullness, rapid loss of condition, and sometimes paralysis, occurring usually just after calving is due to lack of sufficient sugar or starchy foods, and is best treated by molasses, 4-5 lbs. a day.

Prevention of these conditions can be brought about to some extent by better balanced feeding, supplying hay, sprinkled with molasses, or an allowance of sugar beet, or grain, avoiding feeding lush green food alone, say, ryegrass or green oats, and by providing a simple mineral lick of bone meal, 1 part, common salt 2 parts. Such measures must be applied during the month or so before calving.

Drenching at Docking Time

"C.H." (NAPIER):—

On worm-infested country would it pay to dose ewes at docking time? Would, say, bluestone nicotine drench have a detrimental effect on the milk flow?

LIVESTOCK DIVISION:—

Much depends on type of country and your farming methods. If ewes are infested to any degree, and mustering at a later stage is troublesome, drenching at docking time could be carried out; it is actually practised by some farmers. The nicotine is the drug most likely, to affect milk flow, and might also make ewe temporarily a little "dopey" and less likely to pick up her lamb again. I should advise omitting the nicotine and using a drench containing bluestone alone. If you mix your own, you probably use the 2% solution—1 lb. to 5 gallons—of which the dose is 2 oz. for ewes. Bluestone alone is advised because it is quite effective against the wireworm (*haemonchus contortus*) which is the one most likely to affect lambs up to weaning stage.

On heavily worm-infested pastures considerable benefit results from dosing lambs before weaning, using a proportionately smaller dose of the bluestone solution, but this may not be necessary or practicable in your case.

Peas In Cow Teats

"J.W.M." (MATAU):—

Could you give me some information as to the cause and treatment of pea in cows' teats? I have at various times had cows spoiled by this trouble—cows that have appeared quite sound when dried off have come in with a small blockage about the size of a small pea in the milk passage. Sometimes it does not cause a complete stoppage of

the milk, while in others the teat is quite blind. I have never known a cow to be affected in more than one quarter, and it seems to be the best producers that are the most subject to the trouble.

LIVESTOCK DIVISION:—

Obstructions may vary from a thin membrane across the top of teat to a fibrous constriction at some part of the teat canal, which may or may not completely block the passage of milk. They are of the nature of scar tissue, and are therefore the result of previous inflammation and thickening of the lining of the teat canal, which may have been due to injury. Cases have been seen of heifers calving with the condition present in one or more teats, perhaps caused by being sucked as a calf. In other cases injury may be due to rough hand milking, or stripping, since they occur also in machine-milked cows.

Prevention therefore could only be along general lines by avoiding unnecessary injury to the teats. Cows with greatly distended udders should be brought in to the shed quietly and not rushed in, which may lead to bruising of distended teats.

Treatment is difficult. It should be left to a qualified veterinary surgeon, who has the necessary instruments and

can take the necessary strict precautions, as to cleanliness.

It is a simple matter to force some kind of probe or teat syphon through the obstruction, and break it down so that milk flows more or less freely for a few days but the resulting swelling and reaction will probably result in a worse obstruction than ever. Apart from this is the great danger of introducing infection into the quarter, with resulting mammitis and upset of cow's health. When in skilled hands such infection may follow.

It is recommended therefore where the obstruction of teat canal is complete, or so nearly complete as to make milking very tedious, to leave the obstruction severely alone and allow quarter to dry up in the hope that by another season the obstruction may have absorbed and disappeared.

Saddle Sore

“H.G.F.” (ROTORUA):—

My riding horse has developed a saddle sore in the centre of his back just under the end of the saddle. It is about the size of a hen's egg and very flabby. Should I open it or not and could you suggest a cure? I have massaged it with embrocation, but in vain.

LIVESTOCK DIVISION:—

When the effects of the embrocation have worn off, the hair should be clipped and a blister made up as follows, well rubbed in to the affected part for 10-15 minutes:—

- 1 part Biniodide of Mercury
- 4 parts Lanoline
- 4 parts Lard.

A second blistering, if necessary, should not be given until all effects of the first blistering have disappeared. The skin should be quite dry before the blister is applied.



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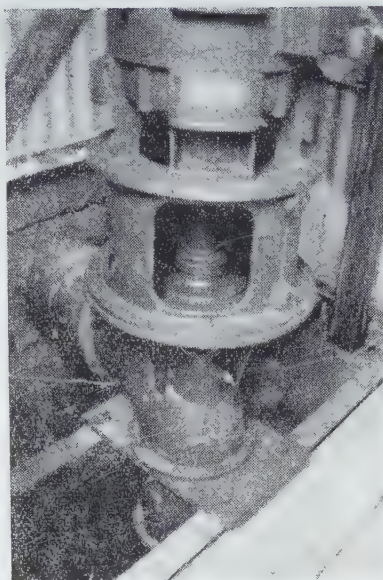
Farm Practice and Management

The Electric Flood Pump

ALL farm production from the Northern Wairoa river-flats is dependent upon the efficiency of the drainage of the land. Excess water in the soils of these areas not only originates from the rain which actually falls on the land and the water which runs down off the surrounding hill country; but also from the Northern Wairoa River itself when the tide is full. By cutting off the hill water; by removing the surplus rain water falling on the land itself; and by stopbanking out the river water, can the drainage be made efficient, and the full productive capacity of the land realised?

Perhaps the main essential portion of the drainage system that must be fully considered and efficiently provided for, is the outlet. On most farms the outlet is provided by means of one of the many types of flood-gates through the stopbank. Near the river-banks, where the water during the low states of the tide drains away rapidly owing to a good fall, well-constructed floodgates work efficiently. However, many farms, through necessity, place the floodgates across or opening onto drains well back from the river itself. The tidal water flows up the open portions of the drains twice each day, and before long the drains are silted up, vegetation commences to grow, the water from inside the drainage system is blocked from free access and the gate is held open allowing tidal water into the farm areas.

The main outlet of the drainage system on the farm of the Northern Wairoa Experimental and Demonstration Farm Society, Dargaville, is one which presents difficulty in obtaining an efficient outlet. The floodgate was situated some 18 chains back from the Kaihu River, a tributary of the Northern Wairoa River. As the drain is right on the boundary of the property it was not possible to place the floodgate at or near the river bank. With the tide coming up the drain twice a day, the cost of maintaining an efficient outlet was considerable. Even after spending more than £50 in some years, the floodgate would not work efficiently for any length of time. The drain would rapidly silt up and the gate be held open. After due consideration of reports from other districts and upon consultation with the County Engineer and the Engineer to the North Auckland Electric Power Board, it was decided to install an electric flood pump and avoid the costly mainten-



Left.—A view of the pump from inside the pump house. Right.—The outlet of the flood pump. Note the flood gate over the outlet; the highest recorded tide came over half way up this outlet.

ance of the long drain which was up to 10 feet deep at places. Further advantages were to be obtained, notably the ability to drain 24 hours of the day with the pump if necessary, as against the limited time between tides.

Running Costs

The work of installing the outfit was performed in July, 1939, and the pump was ready for working on the 8th August, 1939. The annual costs of running the pump for the three seasons to date work out as follows:—

Year	Interest.	Depreciation.	Power Charges.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1939-40	7 0 0	5 12 0	2 0 11	14 12 11
1940-41	7 0 0	5 12 0	4 16 8	17 8 8
1941-42	7 0 0	5 12 0	7 1 0	19 13 0

The season 1939-40 is not a full season as the pump only commenced working on 8th August, 1939. During the winter of 1941, the rainfall was much more than for the same period during the previous year.

Butterfat Production Increased

Each season, particularly during the

early spring months following the installation of the electric flood pump, marked advantages in the drainage condition of the farm have been noted. A study of production figures for the three months, July to September inclusive, will more readily reveal the economical value of the pump. Production of butterfat is as follows:—

July to September (inclusive)—

1938	2,330 lb. butterfat
1939	2,392 „ „

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Everywhere

Will not Taint the Milk

— Made from Lanoline —



General view of the 18 chains of outlet drain from over the site of the old floodgate.

1940	2,941 "	"
1941	3,522 "	"

The average annual cost of the pump amounting to £17/4/10 is but small when compared with the increases in butterfat production. During the period the herd has not been in-

creased in numbers, but it has been possible to provide them with more and better feed during the spring months. Thus instead of calving taking place from mid-August to the end of September, the herd now calves between mid-July and end of August. The increases in butterfat are not only evident in the months shown above, but also for the remainder of the season.

—E. H. ARNOLD, Instructor in Agriculture, Dargaville.

Vegetables Valued at £20,000,000 a Year.

BRITAIN'S amateur gardeners are responding to the "Dig for Victory" drive by growing on their 1,600,000 garden allotments vegetables to the value of £20,000,000 a year. In addition, hundreds of tons of vegetables are being grown on railway embankments throughout the country. The Southern Railway alone have 13,000 allotments covering an area of 600 acres.

Even densely-populated London has found room for over 38,000 allotments, while in the famous parks of the Metropolis an addition 350 acres are

being farmed for food crops and 600 acres set aside for sheep grazing.

London's railwaymen are cultivating 2,700 of these allotments, covering 100 acres, while other workers of the London Passenger Transport Board have dug up 36 acres from which they hope to get 400 tons of potatoes. They are also working 120 acres of market garden land at London's chief bus depot.

Altogether, apart from this, the London County Council is now farming 4,000 acres in the City's Green Belt, and today the citizens of London own 15,000 head of pedigree cattle, 3,000 pigs, 7,000 head of poultry, and 550 sheep.

Last year the City's farms had a record production of 360,000 eggs, 550,000 gallons of milk, 351 tons of meal, 1,668 tons of vegetables, and 81 tons of fruit.

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

ARMS FOR NEW ZEALAND'S FARMS

Because there is no single factor in New Zealand's war effort more vital than the maintenance and increase of farm production, International Harvester, pioneers and leaders in mechanised farm equipment, adopts this creed for the duration of the war.

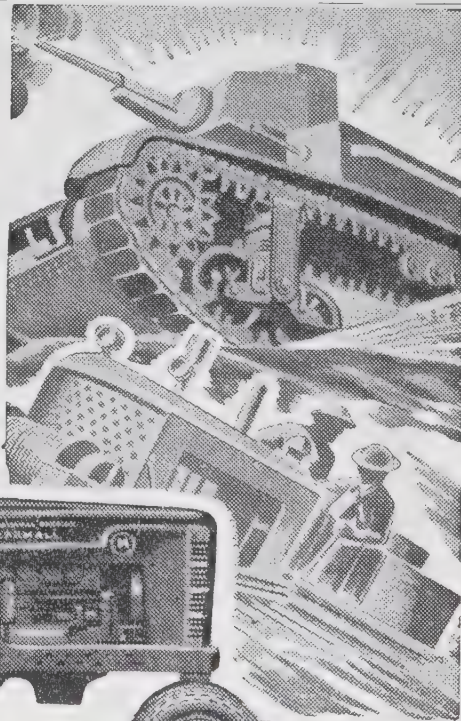
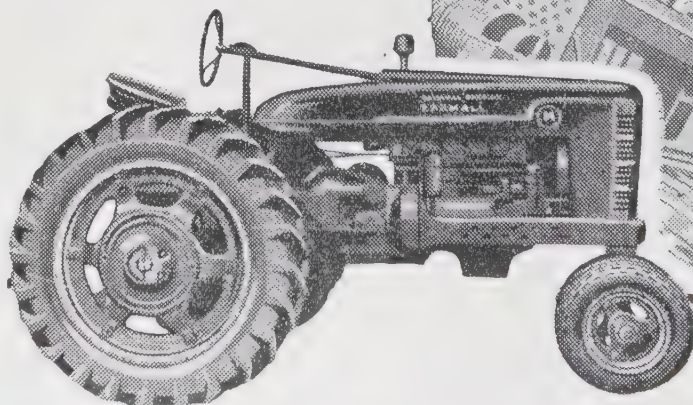
We will focus our big manufacturing resources, our famous dominion-wide service organisation, our energies, our resources, our brains and our experience are marshalled to this one end: the supply and the maintenance of all possible power equipment for the greater strength and security of New Zealand.

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Shelter Your Lambs

THIS illustration of a mothering pen used by a farmer in the Methven District will interest many readers. If turned with its back to the prevailing wind, or drawn up in the shelter of a plantation or hedge in the same field as the flock, the benefit to be derived from it is obvious.

Lambs may be placed in shelter almost as soon as they are dropped, and all delay and trouble in carting them home to the house or shed is made unnecessary. It has been found that weak lambs sheltered in this pen with their mothers overnight are invariably thriving in the morning.

It is inexpensive and simple in construction, and easily moved from field to field. Taking into consideration the time saved in transporting the ewes and lambs, as well as the value of the lambs so saved, it appears that the initial cost of the pen could easily be saved during the first spell of rough weather.

—R. INCH, *Fields Instructor, Ashburton.*

Pig Industry Broadcasts

UNDER the auspices of District Pig Councils concerned broadcasts will be delivered in December as follows:—

1YA, Auckland.—December 17, 7.30 p.m., "Whey Feeding," by the Supervisor, Waikato District Pig Council.

2YH, Napier.—December 10, 7.20 p.m., "Autumn Feeding," by I. W. Outram, Supervisor, Tairāwhiti District Pig Council.

2ZA, Palmerston North.—December 15, 8.30 p.m., "Pig Clubs and District Pig Councils," by H. H. Marsdon, Supervisor, Wellington District Pig Council.

4YA, Dunedin.—December 14, 7.15 p.m., "Pig Recording," by the Supervisor, Otago and Southland District Pig Council.

Cobalt Deficiency in Sheep and Cattle

As the result of investigations into the prevention of bush sickness by the use of cobalt, it is now possible to recommend to farmers in the districts concerned, methods by which they can economically prevent the incidence of the disease. These recommendations are made jointly by the Department of Agriculture and the Cawthron Institute, and are available in a bulletin issued free by the Department.



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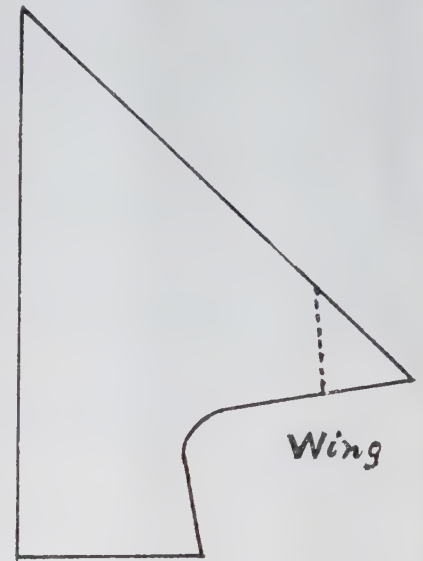
STONY and timbered ground cause much annoyance to ploughmen if cast steel shares have to be used, as is often the case when the soil is very sandy or gritty. Though the cast steel share has excellent wearing qualities, its usefulness along this line is nullified when timber or stones are encountered. On striking such solid objects under the surface of the ground, the wing of the share frequently has the whole weight of the plough or the pull of the team or tractor thrown on to it, with the result that it snaps off, leaving a useless or a semi-useless remnant of a share.

It is not always possible to use the malleable steel type of share owing to undue wear in gritty soil types, but it is possible to overcome to a certain degree the danger of breaking the cast steel type. This is done by breaking off a small portion of the wing as shown in the diagram. By placing the wing of the share on the beam of the plough or any solid straight edge, with the portion to be broken off projecting over the edge, a quick sharp blow with a hammer will break off the wing tip. The share will not cut quite the full width required, but, nevertheless, it cuts sufficient to enable a reasonably

good furrow to be turned, particularly on lea ground.

Another method in assisting to safeguard the cast share from breakage is

Point



Wing

Diagram of cast steel share showing the part of the wing to break off.

to break off about half an inch of the point. In this case it is necessary to reset by grinding.

—J. R. MURRAY, Instructor in Agriculture, Whakatane.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months of May to September, 1942, have been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	110,283	472,127	40,356	21,391	122,246	51,919
Poverty Bay Hawkes Bay ..	29,297	45,095	53,305	33,715	134,138	6,689
Taranaki-Manawatu	54,497	171,501	16,457	12,244	131,366	31,215
Wairarapa-Wellington	23,601	18,240	28,879	14,041	113,161	5,859
Totals	217,678	706,963	138,997	81,391	500,911	95,682
Abattoirs	56,081	17,879	253,599	113,104	25,557	47,059
North Island Totals	273,759	724,842	392,596	194,495	526,468	142,741

South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough	1,307	8,362	7,516	5,239	38,852	2,081
Canterbury	5,949	23,659	94,766	68,933	292,295	9,811
Otago-Southland	7,568	21,172	60,660	49,083	516,015	2,536
Totals	14,824	53,193	162,942	123,255	847,162	14,428
Abattoirs	49,079	10,882	220,482	112,914	25,599	20,320
South Island Totals	63,903	64,075	383,424	236,169	872,761	34,748

Dominion.						
Meat expt. Slaughterhouses	232,502	760,156	301,939	204,646	1,348,073	110,110
Abattoirs	105,160	28,761	474,081	226,018	51,156	67,379
Grand Totals	337,662	788,917	776,020	430,664	1,399,229	177,489
Same Period, 1941—						
Meat-export Slaughterhouses and Abattoirs ..	259,478	791,992	753,914	462,567	1,589,555	219,169
Same Period, 1940—						
Meat-export Slaughterhouses and Abattoirs ..	301,364	770,823	1,009,417	636,370	1,441,377	197,941

Slaughterings of Pigs

The 21,055 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of September, 1942, were distributed in weight ranges approximately as follows:—

Up to 60 lb.	180	The grading of porkers is 86 per cent. of 1st quality and 14 per cent. of 2nd quality; and that of baconers is 78 per cent. of Prime 1's, 16 per cent. of Prime 2's and 6 per cent. of second quality. In the different weight ranges of baconers the grading is as follows:—				
61-120 lb.	10,952					
121-160 lb.	6,016					
161-180 lb.	1,318					
Over 180 lb.	653					
Sundries	1,936					
121 to 160 lb.	81%, 14%, ...	5% of P1's, P2's and 2nds respectively.				
161 to 180 lb.	64%, 26%, ...	10% of P1's, P2's and 2nds respectively.				

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The Pea Crop in Central Otago

WITH the difficulties arising through restricted shipping, new crops are being grown on our farms to produce the seed which is either in short supply or unprocurable from abroad. Crops of turnips, mustard, radish, beans, and peas have been produced in some areas this season for the first time.

The pea crop is the most common of the above group and although it has been fairly extensively grown in this country for many years a number of farmers in Central Otago are now trying it as a new venture.

Peas, apart from their considerable cash value are an excellent and valuable crop in rotation with wheat, as being legumes they increase the soil fertility by their action of converting atmospheric nitrogen into nitrates, part of which are left in the soil. Nitrogen is a valuable factor in the production of wheat.

Varieties of Peas

Peas do best on free loams and medium to gravelly soils rather than heavy tight soils, although under suitable conditions of light rainfall or good drainage, heavy soils will produce excellent crops. Peas can be grouped in the following four classes:—

1. **Garden peas** used mainly for garden crops.
2. **Blue Prussian** used mainly as a boiling pea.
3. **White Ivory** used principally for split pea trade.
4. **Partridge** used mainly for stock food either as a pure crop for feeding off in the late summer or autumn, sown with oats for a hay crop, or threshed and fed as grain.

Since New Zealand is well suited for pea growing a good export trade has been developed in the above varieties.

The garden peas are the most exacting in their soil requirements to obtain good crops. The medium to heavy well-drained soils are best suited to them where the rainfall is not too heavy, or the lighter soils where the rainfall is sufficient to keep the crop growing through the summer.

The White Ivory and Blue Prussian have a slightly wider range of soil types and good crops can be obtained under lighter soil conditions than that required for the garden varieties.

The Partridge is the most adaptable of all the classes and can be successfully grown on even the lighter wheat and barley land. It produces heavy yields, although the price received for it is usually less than that obtained for either White Ivory, Prussian Blue, or Garden varieties.

At present anyone contemplating growing peas would be well advised to obtain a contract from one of the seed or mercantile firms before sowing, as with the present shipping situation it may be difficult to dispose of a crop.

Method of Sowing

All these classes of peas are grown in Central Otago and the area could be further extended with advantage in all the grain-growing districts. Sowing is carried out in the late spring on well-worked land. Stubble land, ploughed in the autumn, left open to the winter frost and worked down in the spring will produce a good seed bed. Sowing is at the rate of three to four bushels per acre for all types. Garden varieties are usually sown at four bushels and the others at three bushels upwards as experience indicates. Cross drilling is often resorted to, partly to get the four bushels sown though mainly to obtain better spacing of the seed and a more even covering of the ground. Rolling of the paddock as a final operation after drilling is advantageous in that a good even surface of the ground is obtained for later cutting of the crop.

Fertilizer

The application of 1cwt. of superphosphate sown with the seed is a useful addition to assist the yield. As with other legumes lime should be applied to the land if the acidity of the soil is at all high, although generally speaking Central Otago soils are not in great need of lime.

Harvesting

The method of harvesting determines the stage at which the crop is cut. When there is some handling of the crop at time of cutting (such as mow-



A 46-bushel crop of garden peas after being direct headed.

ing and raking into windrows or when a windrowing device, attached behind the mower, rolls the cut haulms clear of the horses or tractors for the next cut round the paddock), the crop is cut when the peas are firm, the pods still retain some of their green colour and the haulms are not completely withered or dried up.

When cut on the green side like this there is no loss through the pods opening. Garden peas may be cut on an even greener side while the pods are mottled, creamy-green colour and very little wilting of the haulms is showing. This produces a good green appearance of the seed which is favoured by the "Trade."

A non-wrinkled type of pea seed such as the Partridge has to be fairly ripe before cutting or some shrivelling of the sample will show up, whereas with garden types which are naturally wrinkled, cutting on the green side does not affect the sample.

If the crop is lodged or partly so (which frequently happens) the attachment of about four to six special pea fingers on to the ordinary knife fingers will lift up the haulms sufficiently for the mower knife to make a good job of the cutting.



Pea fingers attached to fingers on platform of header.

After the crop has dried out in the windrows the less handling that can be done the better. If hay sweeps are available, the crop is swept into the stack. Failing sweeps, drays or sledges are used. The crop is frequently pad-dock threshed, in which case it is swept or carted into the mill. If a header harvester with a pick-up attachment is available no further handling is required as the crop is

picked up and threshed direct from the windrows.

If the crop is being direct headed it must be left until dead ripe, that is, when the pods have lost all their green colour and the haulms are withered and dry, otherwise heating of the seed in the bags may occur.

Garden peas have been successfully direct headed and even when allowed to ripen completely for this method of

harvesting still retain a green colour. The use of the header-harvester for direct heading of peas is becoming more popular and, here, again, the use of the special pea fingers attached to the ordinary fingers has allowed badly lodged crops to be successfully harvested.

—G. G. CALDER, *Instructor in Agriculture, Alexandra.*

Weed Control in Nursery Beds

WHEN preparing nursery beds for the raising of large quantities of seedlings—such as would be the case in commercial market-gardening—it often happens that the ground is so thoroughly infested with the seed of numerous fast-growing annual weeds as to seriously militate against success with the sown seed from which a profitable crop is later expected. Probably two of the worst weeds in this respect are spurry and willow-weed, both of which are most prolific seeders and extraordinarily fast growers, especially when compared with the much slower-growing vegetable seeds.

In an attempt to overcome this difficulty, Mr. E. H. Rumming, Overseer, Services Vegetable Project, Rotorua, has had considerable success with the flame-thrower. The ordinary blow-lamp has been used for smaller beds. In the accompanying illustration he is shown destroying a wonderfully healthy growth of very young spurry and willow-weed plants prior to the red-beet, which is sown in the beds, breaking through the surface crust. Thus in a couple of days when the beet ultimately made its ap-

pearance, it found itself in practically undisputed possession of the nursery



bed instead of having to wage an unequal conflict against much stronger opponents.

Moreover, from the management viewpoint the cost of the work was trifling compared with what it would have been had any sort of hand weeding been resorted to.

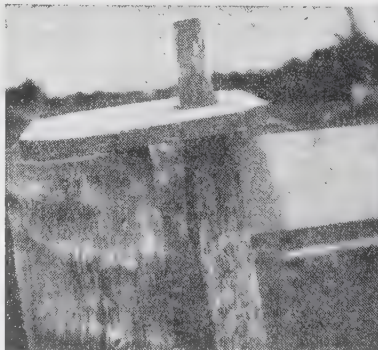
If possible a calm day should be chosen for the work as then the flame can be directed just where desired and for the length of time necessary to ensure a "kill." The flame requires to be a relatively broad one of reasonably high temperature. Avoid an adjustment that gives a long narrow flame as this is not only next to useless, but may even result in some damage to germinating seeds (useful varieties) just under the surface. Used as described, however, the flame-thrower is safe, fast, efficient, and almost costless.

—C. R. TAYLOR, *Fields Instructor, Rotorua.*

Inexpensive Hinges

FOR a small gate, erected temporarily, the expense of buying hinges and bolts is not always justified.

made by boring a 2in. hole in a piece of 9in. x 1in. board, the style being rounded to fit easily through this hole.



The accompanying illustrations depict the top and bottom "hinges" that can be produced on practically every farm.

The bottom "hinge" consists of a beer bottle set in the ground in an inverted position with the style of the gate pointed to fit into the depression in the bottle. The top "hinge" is

The board is then nailed to the top of the post, the gate is swung, and many years of useful work can be expected from this simple expedient.

—G. A. BLAKE, *Instructor in Agriculture, Hastings.*

Concrete on the Farm

Although concrete has been used for hundreds of years as a building material, its application to farming is of comparatively recent origin. Its use in the construction of floors, tanks, silos, troughs, fence-posts, paths, buildings, pipes, field drains, etc., is well recognised and there are few farmers who have not at some time laid down a path or constructed a trough in concrete.

The advantages of concrete lie in the fact that it is relatively cheap to use, easy to prepare, and, once placed, is there for years.

Valuable information on the mixing of concrete and its practical uses on the farm is available in the free illustrated bulletin "Concrete on the Farm," obtainable from the Department of Agriculture, Wellington.

In the Orchard and Vineyard

Orchard Notes

Spraying, Cultivation and Thinning

WITH the advent of warmer temperatures, activity in the orchard becomes more intensified.

As the trees become more heavily foliated the difficulty of securing adequate coverage without undue wastage of spray becomes greater. Avoid using coarse nozzles which, although giving penetration, tend to increase wastage. The most efficient unit from the points of view of adequate coverage and economy of spray material is the rod having two nozzles fitted with medium discs. The fine disc, although giving a fine mist spray, lacks sufficient penetration.

For control of leaf hopper, add nicotine sulphate 1-800 to the spray when the first of the nymphs are observed.

Cultivation

Cultivation is still an important item and during the next two months it should be constant. Weed growth around the trees should be suppressed, as uncontrolled weed growth not only provides shelter for bronze beetle and other pests, but through leaf transpiration dissipates valuable soil moisture during dry weather. Keep the soil stirred, is a good maxim to follow during the periods of dry weather.

Thinning Stone Fruits

For the next few weeks attention must be given to the thinning of the crops. As soon as the normal shedding of stone fruits is completed, a commencement should be made with thinning operations. No hard and fast rule can be laid down which can be rigidly adhered to for all trees. The extent and severity of the thinning will vary according to the crop carried. Size is an important factor in the sale of stone fruits and the larger sizes always command a premium. Large-sized fruit cannot be secured from heavily-laden trees and with such fruits as the Burbank plum upwards of 50 per cent. of the fruit may have to be removed in order to give the balance a chance to attain sufficient size.

The space left between fruits should vary according to crop but at least no two fruits should be allowed to touch. Should fruits be crowded and touching, the spread of brown rot is greatly facilitated. The spacing of the fruit is also governed by its position on the trees and the type of wood upon which

it is carried. Fruit carried on old spent wood will never attain the size of fruit on young well-conditioned wood and in the former instance it should be heavily thinned if not removed entirely, while fruit on the heavier and younger shoots need not be spaced as far apart. In other words, the older and thinner laterals should be thinned much more heavily than the younger and heavier laterals.

Thinning Pip Fruits

Following the completion of the thinning of the stone fruit crop, a commencement may be made in December on the thinning of the pip fruit crop. It is wise to carry out the work in two operations. The first should consist of the thinning of the clusters to permit of satisfactory spray penetration and where the set is heavy the clusters themselves should be spaced according to the age and size of the laterals and shoots upon which they are carried. The second operation consists of the removal during January and early February of diseased and damaged fruits, thus reducing the

quantity of cull fruit which will be harvested, graded and then have to be discarded. It is recognised that with the shortage of labour, growers will wish to economise as far as possible with orchard work, but thinning is an essential operation and cannot be eliminated. It well repays the labour expended on it.

Care of Grafts

Where grafting has been done the grafts should be looked over to see that the ties have been loosened or cut as growth commences so that sap movement and growth of the graft will not be restricted. Where rapid growth is being made some support should be given to the shoots to obviate their being blown off. Many failures have been the result of failure to support the strongly growing shoot which has not yet become firmly attached to the stock.

—R. G. I. HAMILTON, District Supervisor, Horticulture Division, Auckland.

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Plant Nutrition

Phosphorus

Chemical Symbol: P.

Occurrence in Nature: Phosphorus never occurs free, as it is readily oxidised, but in combination as phosphates, chiefly calcium phosphate, of which bones are an impure form.

Function: Phosphorus is important in respiration and in the formation of proteins. It occurs also in the phosphoproteins of the nucleus and appears necessary for the cell division which is the basis of plant growth. It is concentrated in fruits and seeds and promotes early ripening. Also, it increases root development and helps the plant to resist drought by deepening the root system.

Method of Absorption by the Plant: It is absorbed from the soil in the form of phosphate ion.

Recommendations. Phosphorus or phosphates are generally deficient in New Zealand and can be applied in the following fertilisers:

Basic slag	..	12-20% P_2O_5 (insoluble in water)
Ground rock phosphate	..	26-36% " do.
Seychelles guano	..	24% " do.
Blood and bone	..	10% " do.
Fish manure	..	12% " do.
Superphosphate	..	20% " (soluble in water)
Farmyard manures	..	0.3 % " approx.

Potassium

Chemical Symbol: K.

Occurrence in Nature: Potassium never occurs free, but its compounds are widely distributed, being present in many silicate rocks. Wood ashes contain 30 per cent. potassium carbonate. It occurs also as kainit and carnallite (compound salts of potassium and magnesium) and as sylvine or potassium chloride.

Function: Potassium is connected with the vital activity of protoplasm. It is necessary for protein formation and for the functioning of hydrolysing and condensing enzymes. In its absence cell division is not active. It is replaced by sodium to a limited extent. It increases resistance to disease and improves the quality of fruit. In its absence leaf scorch may appear.

Recommendations: Potassium can be applied in the following fertilisers (when available):

Sulphate of potash	..	48 % K_2O (soluble in water)
Muriate of potash (chloride)	..	50 % " do.
Potash salts	..	30 % " do.
"	..	20 % " do.
Kainit	..	14 % " do.
Farmyard manures	..	0.5% " approx.

Sulphur

Chemical Symbol: S.

Occurrence in Nature: Sulphur occurs free in volcanic regions and in combination as sulphides—galena, zinc blende, cinnabar, pyrites, etc.; as sulphates, e.g., gypsum; and as a gas in combination with hydrogen (sulphuretted hydrogen) and with oxygen (sulphur dioxide).

Function: Sulphur is an essential element and often it forms part of the protein molecule. It is absorbed from the soil as sulphate.

Recommendations: It is applied as a by-product in many fertilisers as sulphate, e.g., ammonium sulphate, sulphate of potash, and as calcium sulphate (gypsum) in superphosphate, and in the free state in basic slag which contains up to 11 per cent. of sulphur. Sulphur content is very high in the *Cruciferae* or cabbage family, i.e., radish, mustard, etc.

Magnesium

Chemical Symbol: Mg.

Occurrence in Nature: Magnesium never occurs free but in the combined form as magnesium carbonate, dolomite (double carbonate of calcium and magnesium) epsom salts (magnesium sulphate), and in carnallite, olivine, and other minerals.

Function: Magnesium is an essential element being a constituent of chlorophyll. It is a major element as far as citrus is concerned.

Recommendations: The symptoms of magnesium deficiency are not apparent with young leaves, but can be observed with mature leaves following the removal of magnesium to satisfy fruit requirements. The leaves gradually turn yellow except for the mid-rib and base of the leaf. These yellow leaves are most noticeable after a heavy crop and are readily shed, especially following dry or cold weather

and injurious sprays. A secondary effect is the death of many twigs due to infection by fungi. Magnesium deficiency is associated with seediness. Citrus trees have a large magnesium requirement and the symptoms appear when magnesium is not applied in the manure programme—especially on acid soils with pH less than 5 where

REMINDERS FOR THE MONTH.

Citrus trees must have adequate water at all times to conserve what is available. Build up organic matter in the soil. Mulch your citrus trees. Apply 3-4-50 Bordeaux for verrucosis. Now is the budding season.

magnesium is lost by leaching. Magnesium deficiency is cured by a dressing of dolomite (calcium magnesium carbonate) but the effects are not noticeable until the second year. For quicker action add magnesium sulphate (Epsom salts). Magnesium is applied as a by-product in basic slag which contains 2 per cent. to 8 per cent. of magnesium oxide and in potash salts which contain up to 12 per cent. magnesium sulphate.

—A. M. W. GREIG, *Citriculturist*,
Auckland.

New Zealand Garden Dictionary

HOW to improve poor soils, and maintain fertility by means of humus, fertilisers, lime, drainage and rotation are the fundamentals of successful cropping whether it be vegetables, fruit or flowers.

What, when, where and how to sow and plant are essential facts which must be nicely timed, arranged and executed to produce regular supplies with economy, maintaining fertility meanwhile.

All this, together with a knowledge of the prevention, or control, of insect pests and fungous parasites attacking plants, demands a knowledge of endless detail and many recipes which must be up to date. For this purpose the keen gardener requires a reference book in which the notes on all topics are concise and readily found. The latest edition of the "Garden Dictionary," by J. W. Matthews, F.L.S., contains such notes in alphabetical order, based on the New Zealand calendar and experience. It can be recommended for this purpose to all who are growing outdoor crops of vegetables, fruit, and flowers in the home garden.

Cool Storage Notes

Overhauling Refrigerating Plant and Equipment

AS the fruit cool-storing season ends the refrigerating plant and equipment should be thoroughly overhauled. No plant will continue to operate satisfactorily without overhauling and replacing or replacing worn or faulty wearing parts. If the plant is not given attention now, it may cause serious stoppages and the loss of valuable time when it is needed the most.

To fumigate cool storage chambers when the fruit has been removed, a sulphur and formalin candle burnt in each chamber, and the chamber doors tightly sealed for 48 hours after lighting the candle, will be effective.

When the atmospheric condenser is being scraped and cleaned of rust and scale, it is essential that the most vulnerable spots under U bolts and where the coils come in contact with the standards, should not be overlooked; the only way to do this work is to strip the condenser of these fittings and clean the pipes thoroughly. Paint corrosion and the growth of vegetation are detrimental to the normal transfer of heat from the refrigerator

to the circulating water and their removal will improve the performance of the condenser and reduce running costs.

The Ammonia Atmospheric Shower Condenser: In this type of atmospheric condenser the circulating water is sprayed downwards over the coils, thus providing excellent coverage of the coils. Water troughs placed above the coils at their best do not give the necessary even flow of water over the coils, as there are nearly always some dry ends showing. When in use for some time the troughs become troublesome owing to the difficulty of keeping them level and clean and their frequent replacement also becomes necessary.

When the plant is stopped running for the season make sure that there are no ammonia leaks in the ammonia system, as a very small leak will lose a lot of ammonia over the shut-down period.

To avoid delays in delivery, orders should be placed for spare parts, pack-

ing, ammonia and other stores as soon as the requirements are known.

—A. A. POWELL, *Cool Storage Officer, Wellington.*

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Guide for the Home Garden

Protection Against Insect Pests

STATEMENTS made recently by persons in close touch with the commercial market gardening industry seem to indicate that vegetables for the civilian community consumption may, at certain periods, be in somewhat short supply. Should this forecast materialise, home-gardeners will have themselves largely to blame if full advantage has not been taken of all the facilities available for the production of vegetables to satisfy family requirements.

In the home-garden notes for November mention was made of the desirability of making every endeavour to assure supplies of winter vegetables. It is now intended to deal specifically with a few of the troubles which may

be encountered in growing the crops to which reference has been made.

Carrots

This root crop is subject to attacks by two particular pests: (1) vegetable weevil; (2) carrot-rust fly. These insects are not by any means of microscopical dimensions. The adult grub of the vegetable weevil grows to nearly $\frac{1}{2}$ in. in length, and it is estimated that in a single season it lays from 300 to 1500 eggs, so that infestation of the soil may have very serious results in a garden where carrot crops are being grown. The part of the plant which suffers most injury from the depredations of the weevil is the leaf growth. The danger of infestation may be particularly stressed when it

is realised that fourteen other vegetables in the garden are hosts of the pest.

An infested carrot crop should not be followed by either potatoes or tomatoes, as these plants are also subject to attack by this pest. Control may be accomplished by spraying with nicotine sulphate, used according to the directions printed on the container, or arsenate of lead—powder form—1 oz. to 2 gallons of water. Derris as a dust or a spray will be an efficient destroying agent.

The full-grown maggot of the carrot-rust fly is about $\frac{1}{4}$ inch long. The presence of this pest in the carrot bed may be manifested before the roots are known to be damaged. As soon as the foliage is observed to turn yellow, changing later to the colour of a badly burned brick, it can be assumed that the fly is present. There is no mistake about the presence of the pest when carrots are affected. Destruction usually begins at the crown, and furrows may be eaten round the top and down the sides of the root. Unless prompt action is taken the whole crop may be destroyed or rendered unfit for human consumption.

As recommended in the November issue of the "Journal," horticultural naphthalene, broadcast at the rate of 1 oz. to 9 ft. of row has been proved, by experiment, to be the most effective method of control. This product is cheap, is manufactured in New Zealand, and its use is therefore economically preferable to any imported specifics.

Care of Green Crops

Almost from the time the seedlings of autumn and winter-maturing vegetables appear above the ground, precautionary measures require to be adopted against insect attacks, which, if permitted to go unchecked, will quickly destroy the whole of the growth. Cabbage aphid—green fly—caterpillars, diamond-backed moth, cut-worms, snails, and slugs are the principal pests which are most likely to cause serious trouble to the home-gardener. As soon as the seedlings show signs of active growth they are liable to be attacked by the green fly. Later, the other pests begin to feed upon the growing plants.

The insecticides recommended for use on carrots may also be used with equally efficient results on all cruciferous crops. To obtain the highest degree

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What to Do in the Home Garden Next Month

Summary of Operations During December

SUCCESSIONAL SOWINGS.

Beans (dwarf), lettuce (preferably without transplanting), peas, turnips, silver beet, beetroot, spring onions.

SEEDLINGS TO TRANSPLANT.

Cabbage (savoy), broccoli, brussels sprouts, kale, leeks, celery.

CROPS IN SEASON.

(The month in brackets represents the month in which the seed should be sown).

Lettuce (Feb.), radish (Dec., copious watering necessary), celery (Dec.), endive (Feb.), beans (early Oct. warm districts), spinach (July, Aug.), peas (July, Aug.), spring

cabbage (Feb., South Island earlier), beetroot (almost all seasons), carrots (Feb. for spring maturity).

GENERAL WORK.

Under dry conditions, and always after rain, hoe between plants and in the rows. This will destroy weeds and conserve soil moisture. Healthy crop refuse should be placed in the compost heap, and all diseased crop residues destroyed by burning.

Tomatoes will now require constant attention, pruning, tying and spraying being necessary for best results. Diseased plants should be instantly removed and destroyed. Personal contact with such plants is a positive method of spreading disease to healthy plants.

of efficiency from nicotine sulphate, it should be applied during the warmest part of the day. Slugs and snails may be destroyed by using burnt or hydrated lime—best applied during the evening.

Planting

Before setting out the plants, it is advisable to dip them in a mixture of $\frac{1}{2}$ oz. arsenate of lead (powder) and 2 oz. hydrated lime to 1 $\frac{1}{2}$ gallons water. This will protect the plants from chewing insects during the early stages of growth. Dry conditions during planting will necessitate watering immediately after setting out is completed. The water should be applied so that it will penetrate to the roots of the plants. To ensure this being done the soil immediately around the plant should be hollowed out, until it assumes the shape of a saucer. Into this hollow pour the water, afterwards stirring the surface soil to prevent undue evaporation. If convenient, choose a dull day for setting out the plants.

Tomatoes

To assist tomato plants in producing their highest possible yield of fruit, pruning and tying should be regularly attended to. Heavy surplus shoots which grow from the plant below the two main stems should not be permitted to develop. If not removed they will grow vigorously and rob the main plant of moisture and necessary plant food. Their presence also will prevent adequate spray coverage, and consequently predispose the plant to disease attacks.

Unless under exceptionally dry conditions, water should be sparingly applied. When watering is necessary, the plants should be given a thorough soaking, the application being made early on a bright sunny day. Shallow cultivation of the soil as soon as convenient after watering is advisable.

As protection against blight attacks, the plants should be sprayed every 10 to 14 days with Bordeaux mixture, 3lb. copper sulphate, 4lb. hydrated lime and 50 gallons of water, as recom-

mended by the Plant Diseases Division. To make 5 gallons of the above mixture, use 4 $\frac{1}{2}$ oz. copper sulphate, 6 $\frac{1}{2}$ oz. hydrated lime, and 5 gallons of water. It should be remembered that only containers of wood, porcelain, or enamel-ware may be used for this spray material. Failure to take this precaution will render the mixture worthless and ruin the vessel in which it has been mixed.

When pruning the plant to grow it with a single stem, great care must be

Seasonal Dont's

Don't

wait for trouble in your garden; take all necessary precautions to prevent it occurring.

Don't

neglect your spraying equipment. Clean all parts after use and before putting it away.

Don't

worry over the loss of a few drops of honest sweat. Vegetables are necessary munitions of war, and he who relaxes assists the enemy.

taken to see that the stem allowed to remain is the one which is carrying the first bunch of flowers.

Leeks

Plants for the main crop should be set out not later than December. The part of the garden from which Golden Acre cabbages were harvested will make a convenient bed for the crop. To obtain best results from this winter vegetable, heavy manuring is necessary, and nothing is more suitable than a liberal dressing of farmyard manure dug in before planting. Provided the bed is made of three rows—and this is a convenient size for working—blood-and-bone manure applied at the rate of 4lb. per square yard, combined with

a good dressing of wood ashes, all worked into the soil before planting, should supply the necessary plant food for the crop. Rows 12 to 15 inches apart and the plants set from 5 to 6 inches apart in the row will give adequate room for development. Liquid fertiliser made from cow or fowl manure, applied at fortnightly intervals, will materially assist in carrying the crop to maturity.

Peas

Keep the plants clear of the ground with wirenetting or light brushwood, such as manuka. To secure heavy yields, adequate water is necessary, but good drainage is essential. When making fresh sowings, place the seed in single rows; overcrowding will thus be avoided and seed will be saved. Provided that the soil is in reasonably fertile condition, superphosphate applied at the rate of 2oz. to each 6ft. of row, may be the only fertiliser necessary for the crop.

Beans

Dwarf varieties of beans will require "banking," by drawing the soil from the centre of the rows close up to the plants. This will assist them to remain upright, thus lessening the opportunities for disease attacks. The tendrils of climbing bean varieties should be kept close to the climbing structure. As string or binder twine is not in plentiful supply, stranded flax, if conveniently obtainable, will suit the purpose admirably.

Potatoes

Preparation for planting the main crop of potatoes should now be going on. For this planting the seed should be set wider apart in the rows, which, if practicable, should run north and south. A certain amount of shelter is beneficial, but shady positions should be avoided.

As even short spells of warm humid weather may endanger the crop by an attack of blight, spraying with Bordeaux mixture is necessary, at least every 14 days. When hoeing to keep

down weeds, there should always be a tendency to draw the soil towards the plants.

Cucumbers

Cultivation of this vegetable, which should always be shallow, will serve the dual purpose of destroying weeds and creating a soil mulch. The location on which the "hills" are set should be flat; if not, the plants will be inclined to dry out quickly. Heavy watering is necessary; but the existence of bad drainage conditions will not be conducive to heavy cropping. Liquid manure, rather weak, applied at 7 to 10-day intervals will be beneficial to fruit-bearing plants. When 24 to 30 inches long, the tips of the vines should be "pinched" out. This will encourage the development of lateral growth and assist early fruiting.

Lettuce

For summer cultivation there are special varieties, among which may be mentioned Success and Neapolitan (Summer Market). Where lettuce are desired during the next few months, it is better to sow the seed in the rows where it is intended the plants should grow until harvesting. If desired, the seedlings removed when thinning can be used to make a separate bed. For successful lettuce production during

the summer season, heavy watering is necessary, followed at all times by applications of liquid manure and regular shallow hoeing.

Endive

This is a salad plant, principally grown in the autumn. In Great Britain and Europe it is produced in addition to lettuce, mainly in private gardens. The leaves of the young plants may be used for salads and can be cooked as a substitute for spinach. To appreciate endive at its best, the leaves of the fully-grown plant are tied together at the top so that the centre will become blanched. It then becomes white and very tender. Cultural practices for lettuce may be applied to endive. Seeds may be sown from February to April, and transplanted in rows 12 inches apart with an equal distance between the plants.

Swedes

If not already completed, seeds of this winter vegetable should be sown without further delay. In the home-garden, the seed may be sown in rows 12 to 15 inches apart. The plants should be thinned from 6 to 8 inches spacing between each plant in the row. As turnip tops are subjects of attention by white butterfly and diamond-backed moth, spraying with nico-

tine sulphate or arsenate of lead may be necessary. Derris, in either dust or spray form, can also be used for protection.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Answer to Correspondent

Timber Preservation

"SOFTWOOD" (MATAMATA)—

Would it be possible to make Lawsoniana posts more durable by soaking them in a bluestone solution, and, if so, what strength?

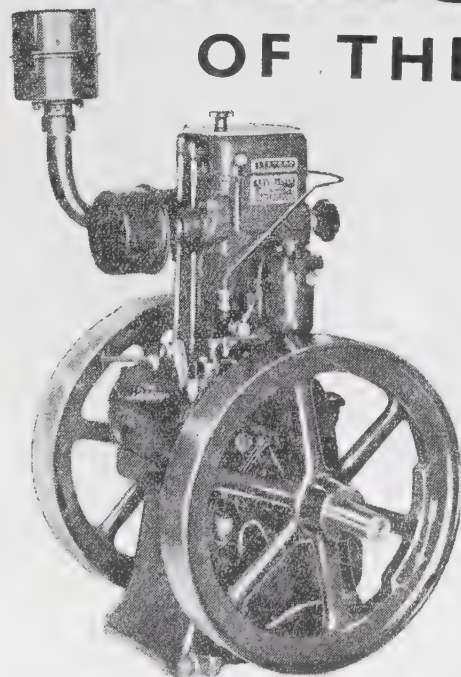
State Forest Service:—

"From 1841 impregnation of timber by a 1 per cent. solution of copper sulphate was used in France on a large scale, but has now given way to creosote.

"The solution has good penetration, but is fairly easily washed out. Its disadvantages are that it corrodes iron (only galvanised iron should be allowed to come in contact with any timber so treated), and is one of the weakest antiseptics in use for the preservation of timber.

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Seasonal Work for Beekeepers

Brood-Rearing

BROOD-REARING must be kept going at all costs at this time of the year and any colony which has failed to make good progress requires special attention. For normal development it is essential that all colonies are provided with sufficient protection from cold winds and artificially-created draughts within the hives so that as far as possible a uniformly high temperature may be maintained within the brood nest for the most economic use of the brood-rearing space in the production of worker bees.

Suitable shelter, especially at ground level is essential in all apiaries and all hive parts should be close fitting to prevent draughts.

Swarm Control

Conditions likely to cause swarming in modern hives are lack of suitable ventilation, insufficient room for the expansion of the brood nest and lack of combs for the storage of pollen and honey. Ample room is also required for the young bees that are continually hatching at this time of the year.

Where a good strain of bee is established with young queens at the head of each colony, swarm control is largely a matter of comb and hive manipulation before the start of the main honey flow; but care should be taken not to place more super accommodation on the hives than is actually required by the bees from week to week, otherwise it will not be possible for the bees to maintain the necessary temperature for successful brood-rearing.

Manipulation of Combs

Where queen excluders are not used the beekeeper should keep the brood down in the bottom boxes, making certain that the bottom box contains at least eight combs of brood and pollen before the brood is allowed to remain in the super above. The queen quite naturally moves up into the second box, and even higher, until she is gradually forced down by the storage of honey in all empty spaces above the brood nest. It is a good plan when making room for the queen in the second box to place all combs containing honey in the centre of the third box directly above the brood and fill in the outside spaces with empty combs. This arrangement of the combs containing honey acts as a block to the queen at this time of the year and will usually exclude her from the supers above so long as there is a suitable honey flow. Apiary work should be arranged so that it is not necessary to disturb the

bees and brood when the main honey flow is full on.

Swarming

When a colony becomes overcrowded with young bees, preparations are made for swarming and then only drastic measures will prevent the bees from carrying out their intention. A simple plan is to destroy all the queen cells which may have been started and divide the brood into two parts, leav-

ing the queen and three or four combs of unsealed brood in the bottom box below a queen excluder, filling the empty spaces with good worker combs for the immediate use of the queen. Place directly above the excluder a super of empty combs or foundation and on top of all place the remainder of the brood nest (mostly capped brood). The brood placed on top of the hive should be examined after about six days, and all queen cells started should be destroyed.

—T. S. WINTER, Senior Apiary Instructor, Wellington.



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Notes for the Poultry Farmer

Egg Quality and the Marketing of Eggs in Summer

DIFFICULTIES in egg marketing have been experienced during 1942 and many problems in this connection have yet to be solved. Poultry-keepers are pressing for these problems to be tackled without delay and now the time has again arrived to urge poultry-keepers to avoid adding yet another problem to those already existent—namely, the “bad egg” problem. Warm summer weather should be at hand and it is during hot days that deterioration in egg quality can so rapidly take place. There is a diversity of opinion in New Zealand as to whether the use of water for egg cleaning is a contributory factor in causing deterioration of egg quality during hot weather. It is a significant fact that both Great Britain and the United States of America look with disfavour upon soaking eggs in water and also upon the use of

should they be allowed to stand in the sun.

5. Warm eggs collected in kerosene tins and allowed to stand over night in these tins tend to “sweat,” thereby rendering deterioration in quality more likely.

6. The regular provision of oyster-shell and good fresh green food will help materially in shell texture and egg quality.

If consumers in the main centres, where egg rationing is still in force, receive poor quality or bad eggs this summer it will surely be a case of adding insult to injury. It is in the power of all producers to help to prevent the many complaints voiced in the past.

By F. C. BOBBY,

Superintendent of Poultry
Husbandry, Wellington.

egg-washing machines. America favours dry cleaning and Great Britain has urged for many years that water be used only to the extent of a moist cloth, which in turn must be kept hygienic by frequent washing.

Care Necessary

It is obvious that under present-day labour conditions, poultry-keepers will turn to any method or machine which will reduce daily routine work. For this reason the fact must be faced that water and egg-washing machines will be used this summer. Even so, poultry-keepers can help to an appreciable extent with this marketing problem of “bad eggs” by paying attention to the following simple points:—

1. Only dirty eggs should be put in water or over washing machines.

2. Egg-washing machines themselves become dirty. The cleaning surfaces over which the eggs pass should be cleaned regularly. These surfaces become slimy and a collecting place for undesirable germs or bacteria, which multiply more rapidly in hot weather than in cold and once on an egg may gain access to its contents via the pores of the shell.

3. Eggs should not be washed until they have cooled off completely.

4. Eggs, after collection at frequent intervals in hot weather, should be stored in a cool egg-room. At no time



Chick Sexing

WITH the close of the incubation season it is of interest to review the position of chick-sexing in the Dominion. Chick-sexing has become an all-important operation in the management programme of many commercial poultrykeepers and any serious interruption, due to war conditions, in the usual plans for chick-sexing would have serious repercussions on the poultry industry as a whole. This fact becomes more apparent when it is realised that approximately 1,400,000 day-old chicks were sexed by thirteen chick-sexers during the spring of 1941. This figure does not include chicks sexed by poultry-keepers themselves and there are a number of producers who sex only their own chicks. It has been estimated that the destruction of unwanted day-old cockerels, as the result of sexing, has saved at least 800 tons of poultry food for birds of greater value to the Dominion under present conditions.

The normal programme of chick-sexing was threatened to some extent at the beginning of the 1942 season by the war conditions at that time. Not less than four of the chick-sexers operating in 1941 were doing military service, while the question of petrol supplies for travelling was a further problem to be faced. Ultimately three chick-sexers, namely L/Corporal J. C. Jamieson, Driver K. Gibson and Private Pirie were released by the Army in July for a period ending October 31. Seven New Zealand chick-sexers operating in 1941 were again available for 1942, while in addition Mr. Jack Clark arrived from Canada and Mr. C. C. Green from New South Wales, giving a total of twelve chick-sexers for the present season. Unhappily, immediately prior to the start of the season, one sexer was lost to the industry with the death of Mr. R. Fairey, of Green Meadows, Hawke's Bay.

Arrangements were made with the authorities responsible for the release of approximately 2000 gallons of petrol to cover travelling of sexers during the season of four months—July to October inclusive. It was estimated from figures supplied to the Department of Agriculture that chick-sexers

travelled some 42,500 miles during the season of 1941. Hence considering the serious position of petrol supplies in the Dominion the allowance for 1942 appeared to be a very satisfactory one.

Figures for the number of chicks sexed in 1942 are not yet available, but it is already obvious that there are insufficient chick-sexers operating in the Dominion. This fact is clearly indicated by the absence of any whole-time chick-sexers in certain large districts such as Taranaki and Hawke's Bay. Furthermore, it would appear certain that some of the chick-sexers are attempting to sex too many chicks in the course of a day and in consequence their efficiency in sexing suffers. It may be impossible to rectify these difficulties while the war lasts; in fact, these difficulties may easily be accentuated in the near future. That problems of this kind exist is fully realised by the Department of Agriculture and in consequence help will be forthcoming whenever circumstances permit. The immediate requirement is for additional chick-sexers and practical advice will be given to any who come forward for training in this work. It should be understood, however, that the Department has no facilities at the Government Poultry Station, Wallaceville, or elsewhere, for giving practical instruction.

Answer to Correspondent

Feeding Laying Hens.

LEGHORN (METHVEN):—

Is the following ration satisfactory for feeding laying hens, or should there be more variety? My fowls lay, on the whole, very well.

Morning: Mash of pollard, bran, a little chaffed lucerne hay (good), and a little meat meal.

Midday: A little whole wheat.

Evening: Whole wheat.

I nearly always feed milling wheat, but never bother with any other grain. I feed, of course, small green feed and oyster-shell grit (no other grit).

I keep about 35 hens, and they have alternate runs, about 10 yards by 20 yards each.

LIVESTOCK DIVISION:—

The method of feeding appears quite good, and I would not suggest any change, with the exception that during the winter months it is preferable to include a little kibbled maize in the birds' midday and evening meals. About one part kibbled maize and two parts wheat would make a suitable ration. Regarding grit, I would advise that oyster-shell and gravel grit be placed before the birds at all times.

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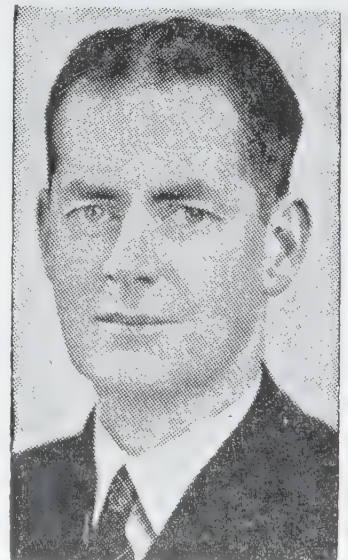
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Federation of Young Farmers' Clubs

Y.F. Club Formed in Prisoners of War Camp in Italy

A POSTCARD has just been received from R. G. Montgomery, who is at present a prisoner of war in Italy. He writes as follows:—

"Dear Mr. Freeman,—Gathered few New Zealanders together and formed Y.F. Club, with instructional classes. Became so popular had to open up to South Africans, Aussies, and Tommies. Now five classes per week with average attendance over two hundred. Classes on sheep, dairying, pigs, bees, fruit, agriculture, etc., with lectures on farming and conditions in many countries. W. J. Woods, ex-Darfield Club, secretary; myself, organiser and president. Lads all keen and chins up, send regards home. If possible send details of any soldiers' settlement scheme. (Signed) R. G. Montgomery, ex-H.B. and N.Z. Council."

Mr. Montgomery was an active member of the Meeanee Young Farmers' Club in Hawke's Bay, and an exceptionally keen supporter of the movement. He did much to assist the progress of the Y.F.C. organisation in his own district and in the Wellington Council area generally. He enlisted early in the war period, attaining the rank of sergeant, and although now unfortunately a prisoner of war, is still doing good work by creating interest for those similarly placed to himself. His initiative in forming a club under such circumstances should inspire us to further endeavours to keep our movement alive.

For the benefit of any who would like to communicate with him his address is as follows: Sergeant R. G. Montgomery, 23177, Prisoner of War Camp No. 52, Hut 37, P.M. 3100, Italia.

Mr. Montgomery will be remembered by fellow-members for his able debating at Wellington Council and Federation annual meetings, and also for his capable organising and work in connection with a particularly successful sports meeting held by the Meeanee Club in November, 1938.

Reports on Club Activities

SOUTH OTAGO.

Clutha Valley.—Report on Patriotic Ball. Talk by Mr. J. Richards, Department of Agriculture, on "The Grass Grub"; the speaker gave a very interesting account of experiments carried out in connection with the eradication of the pest. There were fifteen members present.

Warepa.—Report on club's tree-planting operations. Congratulations sent to the mother of club member recently awarded a decoration on active service. Impromptu speeches by members. At the previous meeting the main points of interest in the report of the annual general meeting of the Federation were read out and discussed; the determination of the club members to carry on was reaffirmed. It was decided to procure a weeping elm to plant in memory of a member accidentally killed. An afternoon was set aside for club members to plant trees on the roadside in accordance with the prearranged plan.

NORTH OTAGO.

Enfield.—Mr. O. Loe, Stud Groom at Windsor Park, gave a very interesting talk on "Red Worms in Horses"; the speaker described treatment and remedies.

SOUTH CANTERBURY.

Maungati.—Annual meeting. There were ten members in attendance. It was decided to carry on with club activities despite war conditions and depleted membership. Officers elected: Chairman, W. Evans; secretary and treasurer, T. L. Dale. Arranged for meetings to take place at Home Guard parades, except where special meetings can be conveniently held; the difficulty of obtaining lecturers on account of petrol and transport restrictions was commented on.

MID-CANTERBURY.

Ashburton.—Club social to be held. Lecture by Mr. R. Inch, Department of Agriculture, on "Farm Crop Seeds and Weed Seeds." Specimens were exhibited by Mr. Inch, and members present endeavoured to identify same. Following this each member gave a short talk on the particular methods in use on their own farms in connection with (1) tailing lambs, and (2) pickling grain.

Hinds.—Impromptu speeches for the Simons Cup resulted as follows:—W. Taylor 1, R. Cocks 2, D. Chisnall 3. It was decided to hold the Set Speech competition for the Father Daly Cup at the next meeting; time to be limited to ten minutes for each speech. Thirteen members present out of 14.

Methven.—J. A. Watson elected secretary in place of W. J. Penney. Methven District High School pupils and club members debated on two subjects: (1) "That the abolition of corporal punishment of juvenile offenders has not been in the best interests of the community," and (2) "That there should be no exemption from military service on account of a person's occupation." In addition to visitors there was an attendance of 20 members.

CHRISTCHURCH.

Ellesmere.—Short talks by members as follows: H. G. Stephens ("Farming in England

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as it is Today'); J. Mawson ('Sowing Down of New Pastures'), and A. C. Lambie ('The Ideal Type of Dairy Cow'). Attendance of 19 members.

NORTH CANTERBURY.

Scargill—Omih.—Discussion re purchase of National Savings Bonds. Talk by Mr. R. J. Black on "Ensilage and Haymaking." Attendance of twenty members.

MARLBOROUGH.

Flaxbourne.—General business. Talk by Private A. Wooding, a club member, on "Fiji." Twelve members present.

TE KUITI.

Otorohanga.—Arrangements for Annual Birthday Social. Ten-minute talks by members: D. V. Brightwell ('Pampas Grass'), D. W. McCormack ('Whaling Industry'), B. Richardson ('Australian Dingo'), S. Long ('Catching Wild Horses'), C. Murphy ('Superphosphate Works'). Fourteen members present.

BAY OF PLENTY.

Paengaroa.—Two new members enrolled. Further donation of £2 made to the Paengaroa and Pongakawa Patriotic Committees. Lecture on "The Production of Clean Milk for Butter and Cheese" by Mr. C. Foskett, Farm Dairy Instructor; seventeen members attended. An open meeting was held in the Paengaroa Hall, at which Mr. J. M. Smith, Fields Superintendent, Department of Agriculture, Auckland, gave a lantern lecture on "The Chatham Islands." There was a total attendance of 52, including 10 visiting club members and 25 older farmers.

Britain's Giant Plough

A GIANT trenching plough weighing four tons is now at work in England turning acres of water-logged ground into land which will yield crops next year. It is an ingenious trenching implement designed in the North of England chiefly for use in land drainage. The new machine cuts channels to a depth of two feet nine inches at the rate of a hundred yards in four minutes.

The base of the trench is cut by a share, while cutters carve the sides,

the earth passing up inclined boards to ground level, where it is formed into equal ridges on each side. The implement is hauled by a pair of windlasses, driven by two diesel engines placed at each end of the field. One windlass pulls the implement along when cutting, the other returns it into position for cutting the next trench.

The standard windlass employed for this work by the designers has a range of gears with different speeds for different soils, and the winding drum carries 450 yards of steel plough rope.

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Health Notes for the Farm

The Miracle of Sleep

FROM whatever cause it may arise, sleeplessness holds terror for everyone. There is no condition which has a more debilitating physical and mental effect than prolonged sleeplessness and people often go to extreme lengths to get relief. That relief in itself may prove dangerous, and when it comes to a matter of drugs your doctor is the only person who can help you out.

There may possibly be some among us who have never known the ordeal of sleeplessness, that wretched torment of the night hours when sleep refuses to come—when mind and body twist and turn in a desperate effort to win repose. They are to be envied. Most of us at some time during our lives have had those spells of wakefulness followed by a feeling of utter inertness and hopelessness in the morning. In those lonely night watches trivial things are magnified a hundredfold and there eventually comes a stage when the sufferer retires harassed by the doubt as to whether sleep will come. And of course it doesn't come.

Sleeplessness presents a pretty problem in self-discipline—that is, the sleeplessness that is **not** associated with some specific disease but with

temporary unrest of the mind and body. The only way to conquer that tendency to sleeplessness is by mental and physical discipline, coupled perhaps with some spiritual aid.

The Physical Aspect

That doesn't sound easy. It isn't easy. It requires effort. Take the physical side—this concerns chiefly mental workers. To them exercise is important. Too little exercise in the face of hard mental work prevents the body from getting rid of its waste products. The person becomes self-poisoned, or auto-intoxicated, as we say. This poisoning results in restlessness at night and inability to sleep; in the daytime it shows up in loss of appetite and energy.

Far too big a proportion of our people, unfortunately, suffer from this self-poisoning. An hour's walking daily will help to offset this condition and make a difference to the way we sleep. Try walking to work.

A mild alkaline saline in a long tumblerful of water on rising will often improve matters and two or three glasses of water taken at intervals during the day are a help.

A little more care in the diet is important. Here your doctor can help you. Then again, a warm bath and a good rub down at the end of the day is very soothing and at bedtime a warm drink is useful in promoting sleep—milk, lemonade, barley water, or just plain water. In this way blood is drawn from the brain to the stomach and sleep encouraged. In the case of an elderly person unable to take a sufficient meal before retiring, hunger may cause wakefulness in the small hours. A biscuit chewed slowly and a small drink of milk from a vacuum flask near the bedside will help sleep to come.

Clean linen is well worth the laundry bill; let the bedclothes be warm and comfortable and don't be afraid of circulating fresh air in the room. Then relax—relax every muscle deliberately, starting from the toes up—and lie comfortably on the side with all joints slightly bent.

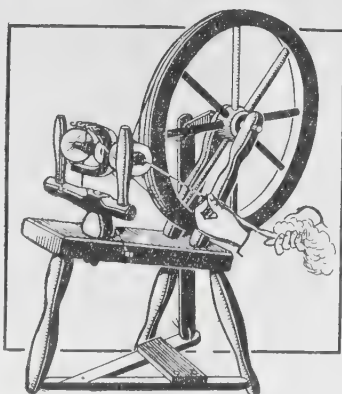
Mental Treatment

So much for the physical aspect. Mental treatment calls for a little sterner discipline, though a properly-relaxed and comfortable physical repose is a valuable start. Before trying to go to sleep it is well, if one is in a state of anxiety, to look the cause of the anxiety squarely in the face. Having done that, impress upon your mind that worrying won't bring you a scrap nearer finding a solution and then try hard to dismiss it from your thoughts altogether. You'll find it's not so difficult after a while. A way to help is to recall some beautiful or enjoyable scene or some pleasurable past experience. Let them take the place of those other bogeys of the imagination and help sooth the mental unrest. Train the mind to accept them. It can be done.

Meanwhile, it's a mistake to worry about sleeplessness itself. This only intensifies the trouble. Lying in a comfortable attitude and in a peaceful frame of mind will in itself be a rest and an aid to rebuilding vital energy. Such a state of quietude will merge into the miracle of sleep.

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THE

Good Neighbour

BY MARY

From Me To You

I WISH I was an artist so that I could capture for you, and forever, the beauty that is before me now. I do wish you were here to share it with me—the magic of a holiday. Yes, I am holidaying—one precious week stolen from the very days themselves, seven shining days which will forever be set apart from the other three hundred and fifty-eight of this year, just one precious week when the very world itself seems to have paused in its activities just to allow a small and unimportant person such as myself to “stand and stare,” and to revel in the beauty around me. This is a gem of a holiday spot—a sheltered corner of the Marlborough Sounds. From my window, as I write, I can see a cherry blossom tree in full bloom—picture for yourselves the pale pink of its flowers and the deeper pink foliage outlined against a sea of Mediterranean blueness. Reminds me of a verse I love:

“A curve in the road, and a hillside,
Clearcut against the sky,
A tall tree tossed by autumn wind,
And a white cloud sailing by.
Ten men went along that road,
And all but one passed by,
He saw the hill, the trees, the cloud,
With an artist's mind and eye,
And he put them down on canvas,
For the other nine to buy.”

Beyond the cherry tree, which stands like a sentinel guarding the gate, the grass slopes gently down to the golden strip of beach and beyond that again the jetty runs out into the clear waters. On the opposite hillside, not very far away, the bush comes down to meet the water's edge. This morning when I woke, the sun was shining over the hilltop and it tipped the flowers on the apple blossom tree, all dewy wet they were and they shone like polished silver in the morning light.

Yesterday we went walking in the bush behind us. We climbed and climbed, and oh! the beauty of that bush walk! In one spot we found a grove of birches, their

black trunks and silvery-green foliage being silhouetted against the blue of the sky above. All so lovely—I am sure had I been there on a moonlight night, there would have been elves and fairies dancing in that grove for my delight. The bush was full of birdsong and sunshine filtering through the trees; and our hearts were full of a quiet content undreamed of in the busy ways of the city.

And by the time you read this I will be well back again into the whirl of tomorrow, with this idyll of loveliness far behind me, but remembering that “God gave us roses in June that we may have memories in December” I will look back on my springtime holiday with joy.

And because I have enjoyed myself so richly, I would ask every one of you to make a special effort this summer to have a break, no matter how small, away from

your usual occupation. Just drop all your worries and relax. There is nothing like it for reviving tired hearts and tired toes. And there is always the joy, after being away, of returning—the welcome of your dear ones, who cannot do enough to show how glad they are that you are back again; and too, there is the joy of new friendships, or perhaps renewing old ones. Life slips away far too quickly—we must do our best these days to make the very most of every moment and to do that we must be fit and able to carry out what lies before us. So don't think a holiday is a waste of time—it isn't! It is an investment you will never regret.

Mary

Mary's "At Home"

THE days are very hot here and although spring is still here, the weather is so mild that it is hard to believe that summer is not well advanced. I started on my big garden this week-end and three dozen tomato plants were amongst the proudly planted. Do you like animals? So far we have twenty-one “additional”—otherwise calves, and really they are little darlings, gambolling in the green fields.—M., Feilding.

ABOUT that problem to solve in a recent competition: I do feel that the winner, “Rainbow,” handled the subject in a most able and just way, looking at it from all angles and summing it up in a decidedly practical way, for indeed it was no frivolous matter to set a mother's heart at rest. I was sure she would derive great help

and solace from “Rainbow's” entry. Incidentally, what a life it would be if husbands could be turned out to order! 'Tis a much better test, however, to make the best of what one gets.—Roundabout, King Country.

MY spare time these days is taken up with Red Cross work and I don't seem to have much time for letter writing. During the winter I had lessons in papier mache with the object of making splints, bowls and trays for E.P.S. and Red Cross needs. It is very interesting work but takes time to become proficient.

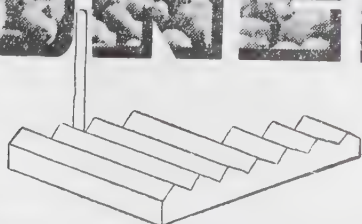
I liked your letter about remembering birthdays, but I am afraid I must confess to not always remembering those of my friends. Years ago it was the fashion to have a birthday book and our friends were asked to write

"Happy Days"

Lapping ripples against a gleaming hull, and drowsy warmth of Summer sunshine are promises of the peaceful days to come. Until then we must forfeit some of our necessities, so that if you cannot buy your full requirements of Onehunga Blankets please remember that they are to-day on active service with those who need them most. But Onehunga quality is worth waiting for until the days when peace and plenty return to our land.



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their names in the space allotted to the day of their birthday. I haven't seen one since I was a young girl. But one birthday I always remember is that of a dear aunt, who was kindness itself to me when I lost my mother many years ago. She is a very sick woman at present and has had rather more of life's troubles than most of us, but she has never complained. She has two sons serving in the Middle East and I hope they will be spared to come back to her, as she was proud of them when they enlisted.—**Betty G., North Canterbury.**

I HAVE just read "How Green Was My Valley" after seeing the film—enjoyed both immensely and shed a few tears in the darkness of the theatre too—not that I am a tearful person as a rule! Today my mother-in-law celebrated her birthday and it has been such a jolly day. I had planned to take her to visit some very old friends, but things didn't work out that way—instead we had visitors. One friend arrived with flowers for the birthday lady and a plate of cream puffs for me—well, well, now you know why my curves aren't ironed out! I enjoyed your laughter lines. Someone once sent me a clipping when I said I was a dud gardener and it read: "If we cannot strew life's pathway with flowers, we can at least strew it with smiles." That was a compliment to me anyway, for spreading some joy germs!—**Laurel, Feilding.**

I ALSO love rummaging but owing to moving about so much, my treasures have not accumulated as much as I would have liked. One of my pet hobbies is collecting transfers. Whenever I feel blue, or sorry for myself, I get out my box and go through them, planning just where I will use this one and what I will do with that one. By the time I have finished I feel a new woman and long for the day to come when I can sit and do fancy work! The joke is, amongst my friends, that I have not done a piece of fancy work for years, except a few things for Boy when he was a baby. I have just come back from a week at Arthur's Pass. We had the usual weather—snow one day and then it rained. Now, when it rains on the Coast it rains and it is just a deluge which keeps up for hours, but it is very warm. We came home to find the sun shining, the flowers bright and gay everywhere and as all we had seen for a week was dank and dripping bush it was a welcome change.—**Biddi-Jan, Redcliffs.**

ANOTHER month beginning—don't they fly? Spring is here and we hardly have time to notice. From the cowshed we look down a stream bordered with willows. All winter they have been brown and dead looking, then last week, almost overnight it seemed, they have adorned themselves



Judy Garland, the young Metro-Goldwyn-Mayer star, is thrilled over her new two-piece royal blue wool ensemble. There is an all-round pleated skirt, topped by a snug-fitting hip-length jacket. Touches of white pique in the collar and round white buttons add a fresh note.

in delicate green. With the sun shining through they look beautiful. I wonder how far "London Lass" has progressed in her decision to learn to write music? Poetry I am afraid is not in my line, but I'd just love to be original enough to write music. In my youth I was fortunate enough to learn the violin which I have kept up ever since. Now that the family is old enough I have taken it upon myself to put them "through the ropes." We bought a small-sized violin and Misses Seven, Nine and Eleven are already well on the road to becoming budding Kreislers—I hope! Coming home from the cowshed early one morning I wondered whether the children would be awake. On nearing the house I heard strains of music and was much amused to discover Miss Seven sitting up in bed practising her violin! She said she had tried it lying down, but found it wasn't very convenient. That, to quote your editorial, was my "morning tonic." I certainly started that day with a good laugh.—**Brynmawr, Aramoho.**

I HAVE been meaning to write and tell you how thrilled I was to learn that I had won a prize in the competition "Wartime Substitutes." I have bought a cookery book that I have coveted for some time and the rest of my prize money has gone into my National Savings account. I collect cookery books (chiefly old ones) and my family are amused when I take one to bed with me if I have nothing else to read. And I thoroughly enjoy reading cookery books in bed. Now and then I find a new recipe or a use-

ful hint to thrill me. Now my English parcels are all away I will start on my Christmas parcels for friends here. I always collect my gifts during the year. Do you do this? It is really very fascinating and much more satisfactory than just rushing in and buying anything for anybody.—**Lady Jane, Wellington.**

THIS year the shops up here have been buying eggs at very high prices (this is the early winter) and folks have been buying them too. And now, just as our ducks have commenced to lay, the price is going down, because the grocer said people don't want them at this price, even though it is much lower! It's a weird world—we buy whilst prices are high, and then drop out as the prices drop.—**M., Feilding.**

I FIND that by using Saccharin tablets it makes my sugar ration spin out. Instead of putting 1 cup of sugar, I use $\frac{1}{2}$ cup of sugar and 2 saccharin tablets. For preserving I put two tablets into a quart size jar, and 1 in a pint size jar. When opened for use, add about $\frac{1}{2}$ cup of sugar to juice, dissolve, and then add fruit. Saccharin tablets have no food value, but are excellent for diabetic people. They are also useful for adding to tea, coffee, or cocoa.—**Rainbow, Waimate.**

THE girl we had with us has gone, and she wasn't very nice to us before going. Isn't it queer, Mary, how people working for you always try to pick a quarrel before they leave, instead of leaving as many friends behind them as they can. We treated our girl as one of the family, took her everywhere with us, and yet she disappointed us.—**C.T., Hawera.**



Your Maternity Frock by Mail

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.....J.A. 16/11/42



Our Competition

MILESTONES

WHAT a host of interesting memories this competition has disturbed! As I read your entries I could see you looking back over the years, wondering which milestone has marked the most vital turning point of your life.

The entry submitted by "Liberty," of Gisborne, could easily have been submitted by many others, and it is because of its appeal that I have awarded it first prize. "Roundabout," King Country, comes a close second, and highly commended we have "Laurel," of Feilding.

First Prize

TURN the pages slowly—you will find all the milestones here: it is a large black book, with "photographs" in gilt lettering on the cover. Look at her, a lovely bride in white satin and orange blossoms. So shy, so sweet and so very happy. This is the first big milestone in her life. And a snap of her first home, a little snug place, full of dreams. Linger a little at the wee corners; afternoon tea on the lawn, the proud husband pushing the lawn mower. And what is this? The bride again, with a baby in her arms. A big milestone this, and still that look of radiant happiness. All the next pages are full of small milestones: the baby in long clothes, now a christening robe, now short ones. Here he is showing his first teeth in a wide grin and just look at him staggering on his feet for the first time!

And the next one. He is going to school for the first time and the mother is on her knees saying good-bye. The little fellow's arms are around her neck, and his new school bag shines in the sun. Such a big milestone this—no wonder mother looks a wee bit anxious.

Turn the pages again—school, and then high school. Finally you turn them again and find—not a schoolboy any longer, but a soldier. He has gone overseas and is fighting for her, that starry-eyed bride, now his mother, who is Me. It is a big milestone this, and his father and I know lonely moments. But it is a Milestone in the nation's life too; a turning point, a vital moment. You smile through the mist that gathers in your eyes and over the radio there comes a song which is

a breath of comfort, a re-assurance, granting you a moment's compensation for your loss. You listen and press your husband's hand in silent understanding. While you have something vital to give, a Milestone where you stand and wait, you know "There'll always be an England" and England will be free.—*Liberty, Gisborne.*

Second Prize

I WONDER how many of us realise that in spite of each life being so different, we each and all of us really travel the same road to the ultimate goal? The milestones we pass en route are the flags or emblems of achievement and once past we look back with fond memory, but seldom wish to re-trace our steps, for with each of life's varied experiences, we feel that we have achieved some little part of our purpose in being part of this wonderful world. In my case, schooldays were milestones each year when I stepped into a new class and later I was deep in the interest of trying to teach others. Yet soon these days went and I entered the sphere of matrimony, which I think is the biggest milestone of all, for in adapting oneself to this life, both of the contracting parties have so much to give and take that it indeed stands forth as an important milestone of Life. The next most vital milestone, to me, is the birth of children. It was not until I had my first baby and realised all that it meant of responsibility and love, that I was face to face with the reality of what parents stand for in this world of ours. Until one is a parent, one is too apt to take one's own parents too much for granted and apart from loving them dearly, one needs the wisdom of the years to show their worth. Yes, my biggest and proudest milestone is "Home," and many of you will be familiar with that old song "Where the milestones end, there's home."—*Roundabout, King Country.*

Highly Commended

I HAVE been pondering over the milestones in my life and remem-



The Milestones of most of you seem to centre largely around your children, and although this little lad is not the boy of our prize-winning entry, I am sure you will agree that his progress spells milestones in the life of his mother. He is Larry Simms, of Columbia Studios.

bered those that we counted on the railway journeys of school holidays. I recall some divinely happy milestones as well as some still poignantly sad ones, but we all have these memories which we do not want to share. This is an everyday sort of milestone, but what a difference it made to life: it was the coming of electricity to our district. When I came to live in the remote country I did not realise how I should miss the lights and electric iron of my girlhood home. It took me

Competitions

November

Our next competition closes on **December 15**, and the subject is "What is the effect of radio serials on the minds of our children?" Send in your opinions, they will be most interesting.

December

Every mail I open brings me news from one or another of you about your pets. What grand companions they are, our pets. I had two goldfishes once, that swam round all day in a golden bowl, and how attached I became to them. So our next competition is to be about your pets—we want to know what they are, and what they do.

"OUR PETS."

Let me have your entries by **January 15, 1943**, and you may win one of the two prizes, first 10s, and second 5s.

"MARY."

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months to stop rubbing the walls, feeling for light switches that were many miles away. I think I was a little afraid of kerosene lamps, but in time I learned how to keep my lamps filled and shining, and could easily cope with broken globes, smoky wicks and troublesome moths. Candles—how I dislike them! And when I read glowing descriptions of beautifully appointed dining tables, adorned with softly burning candles, I cannot work up any enthusiasm, as where there are candles there's bound to be grease spots in

the most unexpected places. Still I must allow the humble candle its uses, as recently my bedside lamp fused, so it was lights out for the household and candles came to the rescue. Next morning, with husband away and being miles from town, I turned off the main switch and put in a new fuse wire. Everything went well, and I was able to do my ironing and listen to my favourite radio speaker. I'd never been courageous enough to do that before, so was that another milestone, Mary?—**Laurel, Feilding.**

THE two events in my life which stand out as milestones always make me pause to wonder where my lot would have been cast had they not happened. The first is tinged with sadness and marks the death of my mother while I was still in my teens. All thoughts of a planned teaching career had to be abandoned and instead, I had to undertake the care of a young sister and a home on the back-country sheep farm. I had little practical knowledge of the new task which lay ahead of me and it must have presented many problems at times. A diary of those days would make very interesting reading now, but I think I must have been too busy to even think of keeping a diary. Thirteen years later marks another milestone, and although it meant a break away from home and earned then the disapproval of a very stern parent, nevertheless it brought me every happiness and no regrets. My housekeeping duties were able to be left in capable hands and as I had answered the call of duty when it was most needed, I felt that I had earned the right to spread my wings. I went north to spend a holiday with a friend and from there ventured further afield. Suitable work came my way and later marriage, with a home of my own. I have been very happily married now for several years, and it is interesting turning back the pages of memory and seeing just how these milestones were connected.—**Betty G., North Canterbury.**

"A HI! Could I be once more a careless child!" These words of Coleridge's remind me of a certain milestone in my life, way back in pioneering days, when my father—stout-hearted pioneer indeed—took up a big section of land (then virgin bush) in the backblocks of Taranaki. And with him went my mother and eight young children—one of whom was myself. Fifteen miles of mud road—or clay road as it is called nowadays—eight of it a rough bridle track to the nearest small settlement. . . . The hardships of those days—and yet we were so **happy!** Not the restless, impatient happiness of modern childhood, but something very deep and satisfying. We literally made our own happiness and certainly a more contented family would be hard to find. This is why that particular milestone always seems so fraught with a poignant happiness never again to be recaptured.—**A. M. Dowell, Taranaki.**



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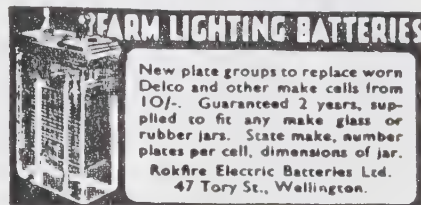
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Watch Your Complexion

SUMMER is coming—isn't that grand? Aren't you just longing to feel the warmth of the sun on your face once again? But do be careful please, for the sun is hard on your complexion, and it takes a little bit of extra special care to keep your skin looking its best when summer comes.

Take your mirror, and study yourself, critically, making sure you are in a good light. Be honest with yourself now! You don't look as young as you looked this time last year, do you? And although you will tell me you are a year older now than then, that has little to do with the matter. You see, you must keep at your complexion, year in and year out, so that later on you will still be the proud possessor of a petal-soft complexion.

How about wrinkles? When you are out in the summer sunshine, you may not be conscious of the fact that you screw up your eyes a little, causing fine wrinkles to form across



Bonita Granville, starlet of Metro-Goldwyn-Mayer studios, realises the importance of good brisk rubbing to keep her complexion glowing with health and vitality.

how tempting the thought of bed can be when we are very weary, but next time you have that "tumble-into-bed-without-cleansing" feeling, just remember that for every night you go to bed with old make-up on your face, you are adding more years to your face. So please, do remember to have your nightly wash, and always apply some tonic to your face before retiring. It is not so much what you put on your face at night in the way of tonics that matters—it is the massage that goes with it that keeps your skin fresh and glowing with health and youth.

Ever tried face exercises? We have all tried those bending exercises that keep our figures slim—now what about some face exercises for a change? Facial exercises do help to keep wrinkles at bay. Take a deep breath, keep your mouth closed, and puff hard against the inside of your cheeks. Now open the lips slightly, and let the air out in little short puffs. If it is your forehead that is wrinkly, try taking handfuls of hair, and pulling them gently. This tightens the skin across the forehead.

Ever tried the yawning way to beauty? Let your head fall back as far as it will go, and open and shut your mouth as though you are yawning. For a change, rotate your head round and round, having an imaginary chew all the time.

And one of the best and quickest exercises to beauty is to whistle whenever you think of it. Whistling puts you in a happy frame of mind, and at the same time brings into action many of the facial muscles.

With a little persistent attention and care, even though your years may be mounting up on you, you will find before long that instead of watching your complexion and yourself, it is the other folk who are watching your complexion, and wondering just what is the secret of your youthful sparkle and beauty.

The Tyranny of Beauty.

THERE is no escape from that which is beautiful. It will have our homage. Sometimes I have even been glad of summer's end to rest me. So swiftly the may treads on the heels of the daffodils, and folded roses be waiting even while the may burgeons, and woodbine stills the heart with a sigh, and then corn yellows in every scrap and gore of barleyland, and lo! apples bin ripe, all painted in one night by an angel. And methinks, times, it is great peace to turn away from all this lust of loveliness to the chilly call of winter, where there is nothing to keep our thoughts back from Him. And then the spirit rests no more in this or that carnal thing of petalled delight, but starteth away hastily over the waste waters, like a seamew, plaining for eternity.

—MARY WEBB.

Helpful Hannah Says . . .

To keep your food fresh and sweet in the hot weather, buy some charcoal, make muslin bags, and put a lump of charcoal in each. Hang the bags as near the food as possible. Charcoal absorbs impurities as a sponge absorbs water. Once a week the bags should be emptied, washed, dried, and filled with fresh charcoal.

* * *

An excellent way to mend kid gloves is to work buttonhole stitch loosely round the hole, and in these stitches work another row of the same stitch. Then draw the edges together, and you have a neat mend that will not tear away the kid.

* * *

Grass stains are annoying at this time of the year. Buy some pure alcohol from the chemist, sponge away the green marks with a piece of clean flannel just damped with the spirit, then wash as usual. Keep the bottle well corked, as alcohol evaporates.

Laudate Dominum.

I saw five poplars in a row,
Trailing their shadows in the grass;
I heard the crick-crack of seeding broom,
Challenging my right to pass.
I saw far mountains, gravely blue,
And beautiful in the tranquil air;
I heard a child's gay laugh—sunshine
Was tangled in her aureoled hair.
I drank the friendship of my friends,
Their love became my daily bread.
For sacramental things like these,
O Lord, my grateful thanks be said.

—M.E.T., Wellington.

your forehead. Wrinkles are the most telling blemishes of all when it comes to straightening up your complexion. Get yourself a bottle of good tissue tonic, and rub it in freely every night—all over your neck and shoulders, too, because they wrinkle easily. Pay particular attention to wrinkles that may be forming above the eyebrows, and massage your face well, always remembering to rub upwards, and away from the nose.

Another tip for keeping your complexion youthful is to remember always to remove make-up before it has been on the face too long. If you are going out for the evening, always apply fresh make-up, and if you are unable to have a good wash, then keep handy a bottle of cleansing milk, and this will do the trick for you.

And whatever you do, or don't do, never go to bed without removing every trace of make-up from your face. Nothing is more harmful to the skin than make-up left on overnight. You may be tired out, and we all know

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Fragrance In Your Bath

HERE is a recipe, very old-fashioned but very fragrant, for a bath sachet. Mix together four large tea-cups of smooth oatmeal, 4 tablespoons of powdered borax, 3 tablespoons of powdered orris root, 4 tablespoons of finely shaved good soap, and 10 drops of oil of lavender. Now make some small bags out of towelling—old towelling is admirable for the purpose. The bags should be about six by four inches, and when filled should be about one inch in thickness. Sew the bags round very firmly.

Just before you are ready to slip into your bath, put in a bath sachet, and let it soak for a while. You will be surprised how refreshed you feel

when you come out of your scenty bath—and incidentally, the bath sachet makes an excellent washing glove while you are in the bath. Do try it.

Knitted Bootees for Baby

THESE knitted bootees are so simple to make, yet they will not slip off baby's toes like so many bootees are inclined to do. They are quickly made on two needles, and require less than 1 oz. each of either 3- or 4-ply fingering. Use No. 8 needles to produce about six stitches to the inch.

Cast on 33 sts. (under the foot), then knit a row. The following is continued in plain knitting, but an increase of 1 st. is made after the first and before the last st. and each side of the centre

st., making an increase of 4 sts. in each row. Continue until there are 53 sts., then work six rows with no shaping. Now decrease one st. each side of the centre in every row until 29 sts. remain, this being the shaping for the top of the foot. Work a plain row (with no shaping), then make a row of ribbon holes, spacing them as evenly as possible. To make a hole, bring the wool forward and knit two together, taking the wool back over the needle. Work about $1\frac{1}{2}$ in. of plain knitting for the leg, and another $1\frac{1}{2}$ in. in ribbing of one purl, one plain before casting off loosely.

Sew together, and insert narrow ribbon at the ankle, thus completing the little bootees, which will be appreciated by those mothers who spend valuable minutes hunting for lost bootees.

Lives depend on her fitness



From the sick and wounded comes an appeal for help which no true woman could fail to heed. She answers nobly—giving herself cheerfully to a work which tests endurance and courage, and takes no account of weariness or nervous strain.

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Mary's Mixing Bowl

Favourite Recipes

This month's competition in the "Mixing Bowl" has been won by "Country Friend," Gore, for the following entry:—

ANCHOVY PASTE.

2lb. steak, $\frac{1}{4}$ teaspoon cayenne, 1 teaspoon pepper, $\frac{1}{2}$ lb. butter, 1 teaspoon mace, 2 tablespoons anchovy sauce, 3 teaspoons salt, $\frac{1}{2}$ teaspoon nutmeg.

Cut up steak, and put in basin with rest of ingredients. Cover and put in pot of boiling water and steam 4 hours. Pour off juice, mince the meat, and add juice. Seal in airtight jars.

GINGER PUDDING.

1 large cup flour, 1 tablespoon butter or dripping, 2 tablespoons golden syrup, 1 dessertspoon sugar, 2 teaspoons ginger, 1 teaspoon soda.

Dissolve dripping or butter and soda in $\frac{1}{2}$ cup boiling water. Mix golden syrup and sugar into it, then stir in flour and ginger. Steam 2 hours. Serves 6 persons.—Gladwin, Crownthorpe.

LEMON JELLY.

4 eggs, 4 dessertspoons gelatine, 1 teacup sugar, rind and juice of 1 large lemon, 2 teacups milk.

Beat sugar with egg yolks. Add milk and gelatine dissolved in one teacup of water (cooled). Add rind and juice of lemon. Fold in stiffly beaten whites. Sets in 5 minutes in the hottest weather. Avoid using the white pith of lemons.—Mum, Gisborne.

SAGO PUDDING.

2 tablespoons sago, 2 tablespoons butter, 2 tablespoons wheatmeal, 1 cup fruit, 1 tablespoon golden syrup, 2 tablespoons sugar, 1 cup breadcrumbs, 1 teaspoon carb. of soda dissolved in 1 tablespoon of cold milk. Enough milk to cover sago.

Soak sago overnight in enough milk to cover. Melt golden syrup, and butter, and mix with the rest of the ingredients. Place in buttered dish, and steam $2\frac{1}{2}$ to 3 hours.—Kim, Auckland.

VEGETABLE PASTIES.

Make pastry as follows:—1 cup wholemeal, $\frac{1}{2}$ cup flour, 4oz. butter,

$\frac{1}{2}$ teaspoon baking powder, pinch of salt, and milk to mix.

Rub butter into flour and baking powder mixed, mix and roll out. Cut into squares, fill with vegetable filling, and fold over.

VEGETABLE FILLING.

2 or 3 sliced tomatoes, 1 chopped onion, $\frac{1}{2}$ cup grated cheese, $\frac{1}{2}$ cup breadcrumbs, seasoning. Bake 15 to 20 minutes. This is a change from sweet things until the fruit is ripe.—J.F., Auckland.

RHUBARB AND VANILLA JAM.

To every pound of rhubarb allow $\frac{1}{2}$ lb. sugar (or $\frac{1}{2}$ lb. sugar, and a pinch of salt).

Cut up rhubarb, and cook till tender in a little water to prevent burning, add sugar and boil $\frac{1}{2}$ hour. Stir in $\frac{1}{2}$ teaspoon vanilla, and bottle. Actually the quantity of vanilla varies with the quality.—Home Cook, Hawke's Bay.

SPRING SALAD ROLLS.

Spread slices of bread with butter, and in each slice roll a mixture of diced radish and spring onion. Arrange rolls in lettuce leaves, put carrot rings and slices of hard-boiled eggs over the top, pour over thick dressing, and serve with cold meat.—M., Feilding.

LEMON MARMALADE.

Don't throw away your lemon skins after using the juice for drinks. To the skins of four good-sized lemons sliced up thinly, add a quart of water.



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Allow to soak 24 hours. Cook until soft, then add 1½ lbs. sugar and half a teaspoon of salt. Boil up quickly, for about ¾ hours, or until it jells.—**Brynmawr, Aramoho.**

CHRISTMAS CAKE.

1 lb. butter, 1 lb. sugar, 10 eggs, 1 heaped teaspoon baking powder, 2 lbs. flour, 1 lb. currants, 1 lb. sultanas, 1 lb. raisins, 4 oz. mixed peel, 4 oz. almonds (chopped), wine glass of brandy.

Beat butter to a cream add sugar, then eggs one by one (unbeaten). Mix baking powder with flour, add to mixture, then fruit dredged with flour, and lastly brandy. Cook four and a half hours in moderate oven.

SAUCE FOR CHRISTMAS PUDDING.

1 large tablespoon butter, 1½ cups hot water, 1 tablespoon lemon juice, 2 tablespoons flour, 1 cup brown sugar, grated nutmeg.

Put the butter into a saucepan, and, when butter is melted, stir in the flour and mix well. Then pour in gradually the hot water, and stir over the fire till well cooked. Then add the sugar, lemon juice, and a small quantity of grated nutmeg.

FROSTED LEMON PIE.

1½ cups boiling water, 2 tablespoons sugar, 1½ tablespoons corn-flour, 2 eggs, grated rind and juice of 2 lemons, pastry.

Blend cornflour with a little cold water, and stir it into the boiling water over the fire. Add sugar, and cook till thick, then add lemon juice and rind. Separate the yolks and whites of the eggs; beat yolks and stir in. Cover a tart-plate with pastry, and bake. Pour mixture in. Whip up the egg whites stiffly with a little sugar, and spread on top. Lightly brown in the oven.

IMPERIAL CREAM SOUP.

1 cup strained tomatoes, 3 tablespoons flour, ½ teaspoon thyme, 2 cups water, 1 bay leaf, 1 cup milk, 1 teaspoon salt.

Heat the tomato and water with the bay leaf and thyme, to boiling. Stir the flour smooth. Heat milk and thicken with the flour, and whip it into the boiling liquid. Add salt, and serve.

CAULIFLOWER LOAF.

1 head of cooked cauliflower, 1 cup milk, ¼ cup flour, 4 eggs, ½ teaspoon salt.

Divide the cauliflower into small bits. Stir the flour smooth with ¼ cup milk. Heat the rest of the cup of milk to boiling, and stir into it the flour mixture; stir till thickened. Beat the eggs, and stir the white sauce into them; then add the salt and cauliflower. Put into a greased bread-tin; stand in an under dish of water, and bake till firm.

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SCALLOPED TOMATOES.

1 tin tomatoes, 2 cups bread-crumbs, 2 tablespoons butter, sliced onion, 1 teaspoon salt.

Steam the onion and cut up the tomatoes. Put a layer of crumbs in the bottom of a pie-dish, then a layer of tomatoes and onions and another layer of crumbs. Dot over with butter. continue until dish is full, putting a layer of crumbs last. Bake about 15 minutes.

CLIFFORD TEA COOKIES.

2 cups brown sugar, 1 melted butter, 2 eggs, 3 cups flour, 1 teaspoon bicarb. soda, 1 cup finely-chopped walnuts, pinch of salt.

Knead into shape of a bar of soap and leave all night; next day cut into thin slices and bake in moderate oven. Best made in cool weather.

CURRIED TOMATOES.

Chop 1 large onion finely and fry in 2 level tablespoons of margarine or good dripping until a nice yellow (do not brown).

Add 1 chopped apple, 1 lb. skinned and sliced tomatoes, ½ level tablespoon curry-powder, 1 teaspoon vinegar or lemon-juice, salt, pepper, ½ cup stock or water. Simmer 5 minutes, add 1 cup boiled rice and heat thoroughly without cooking tomato to pulp. Serve with slices of lemon.

SOUR-CREAM COOKIES.

Beat 2 eggs, add 1 cup sugar, ½ cup sour cream, 1½ cup melted butter, ½ teaspoon vanilla and beat together.

Add ½ teaspoon bicarb. soda, ¼ teaspoon nutmeg and 2 cups flour well sifted together. Drop spoonfuls on to buttered slide and bake for 8 to 10 minutes in a moderate oven.

DATE ROLLETES.

Cream ¼ lb. butter with ½ lb. sugar, add 1 beaten egg and beat in ½ lb. s.-r.-flour. Roll dates in with hands, making little balls, and bake on buttered tray in slow oven till pale brown.

A NEW ZEALANDER'S CREED



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TO SERVE MY COUNTRY IN THE ACTIVE
COMBAT OF WAR I SWEAR I WILL
FIGHT BY EVERY OTHER MEANS OPEN
TO ME TO SPEED VICTORY, AND I NOW
RESOLVE TO SERVE IN THESE SIX WAYS**

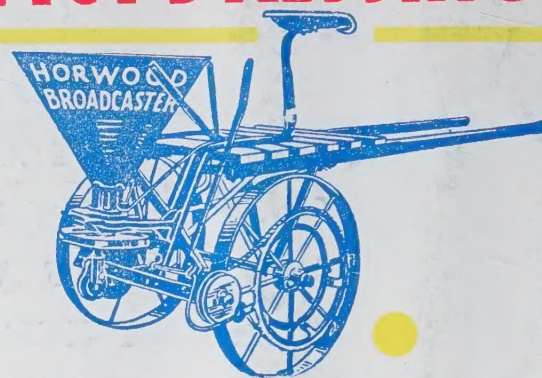
1. By my toil and sacrifice I will contribute everything I can to help build New Zealand's fighting strength.
2. By self denial and frugal living I will make the smallest demands upon the country's goods and services.
3. I will spread the truth, that luxuries and easy living in wartime are bad manners and an insult to our fighting men.
4. I will practice thrift—I will save and every pound I save I shall lend to my country.
5. I will treat it as a trust that every week my National Savings Account shall grow and this will be a measure of my service.
6. I swear that thus by personal effort and sacrifice and thrift I will make a worthy personal contribution to victory and to New Zealand's peace and security.

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IS MY CREED**

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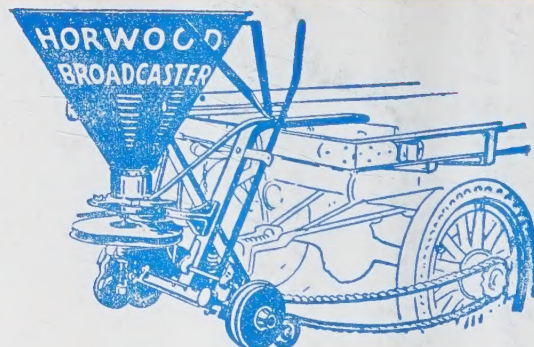


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